

MLSUCA/B
Commissioning and User Guide



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Introduction

1

The MLSUCA/B is an embedded controller/web page server used to remotely monitor and control Ex-Or Digital Managed Lighting Systems (MLS Systems). It has the ability to present its status information and receive commands in BACnet protocol form. In addition, it supports the automated testing of DALI based Emergency luminaries and Signs.

When utilized for lighting control and lighting status display application (i.e. no emergency testing), the MLSUCB takes the role of bus master on the RS485 spine linking a number of RB2000s each of which drives an MLS bus capable of supporting up to 100 separate lighting zones comprised of up to 200 individual presence detectors with photocells.

Control functions in the lighting application can either be pre-programmed actions governed by an onboard time-of-day clock or manual interventions delivered via the supported web page from any co-networked personal computer running a web browser. For BACnet capable installations, real-time control actions can also be initiated by remote BMS devices.

Conversely, information, typically occupancy data, gathered by the lighting system's detectors via BACnet protocols can be passed to other BMS disciplines.

By connecting a single emergency luminaire to individual channels of the LCM, you can create automated test schedules for those luminaires. Each individual channel of the LCM can have one emergency ballast connected. This output is individually addressed, hence any failures in the emergency luminaires can be reported back to the MLS front end application. When using the emergency testing element of the system, the number of available MLS zones for BACnet transmission is slightly reduced.

Terminology

Site

A site is an area or a region which consists of one or more buildings where the MLS front end application controllers are installed.



Note

This page can be configured only by a Site Engineer or Facility Manager.

Building

A building is a part of site which consists of one or more floors.



Note

This page can be configured only by a Site Engineer or Facility Manager.

RB2000 controller

A single RB2000 bus power supply powers and synchronizes the bus supporting up to 200 MLS front end application digital devices. If connected through LCMs, bus synchronization of up to 1000 MLS front end application digital devices can be achieved.



Note

This page can be configured only by a Site Engineer or Facility Manager.

Floor

A floor is a part of a building. Each floor can comprise a number of zones.



Note

This page can be configured only by a Site Engineer or Facility Manager.

Multiple views of the same floor can be used if the floor plan is too large to show adequate detail on screen. This is particularly useful when multiple RB2000s are used on any given floor, and the split is ideally made where the RB2000s are

naturally partitioning the floor. Bear in mind though that memory is limited in the MLSUCA, so lots of floor plan images will consume memory fast.

Zone

The floor is divided into small regions called zones. In the MLS front end application, there are three types of zones.

- **Zone** - Zones are programmed to operate the luminaires in groups for nominated work zones. If any detector in a given zone detects occupancy then all the luminaires in the zone turn on.
- **Common Zone** - Common zone is a group of luminaires that remains on for safety and convenience when any other part of the system detects occupancy. For example, the staircase light remains on when any area in the building is occupied.
- **Corridor Zone** - Corridor zone represents the corridor part of a building. These zones are configured to react to ranges of zone numbers. The luminaires in this zone light up when any zone in the configured ranges is occupied.



Note

This page can be configured only by a Site Engineer or Facility Manager.

LCM

LCM is an Intelligent Lighting Control Module that provides connections for multiple luminaires, presence detectors, and SELV inputs. The unit features a switched output for Maintained Live to allow initiation of Emergency Lighting Test. The product simplifies installation whilst providing an intelligent lighting control system. Three types of LCM's are supported.

CDH4U5 4-channel Programmable Intelligent LCM

The CDH4U5 is an intelligent LCM providing connections for multiple luminaires, up to 5 presence detectors and 5 SELV inputs. Provision is made for 4 volt-free power outputs rated for 415V isolation. It has the ability to operate from dual supplies with the capability to modify its operating behavior when failure is detected on one of the supplies

CDH8U5 8-channel Programmable Intelligent LCM

The CDH8U5 is an intelligent LCM providing connections for multiple luminaires, up to 5 presence detectors and up to 10 SELV inputs. Provision is made for 7 switched live outputs plus one volt-free power output. In addition, the unit is provided with a volt-free signaling output to provide control of / interface to other equipment such as HVAC systems.

CDW12U5 Programmable Intelligent LCM

The CDW12U5 is a pluggable intelligent LCM providing connections for multiple luminaires, up to 5 presence detectors and up to 5 SELV inputs. Provision is made for 12 switched live outputs grouped into 6 independently controllable channels.

Client machine

The computer which is used to log into the MLSUCA/B through an Internet browser application. The recommended browser is Microsoft IE 7 or above.

System Overview

2

Figure 1 shows the system overview of MLSUCA.

Figure 1 System overview (MLSUCA)

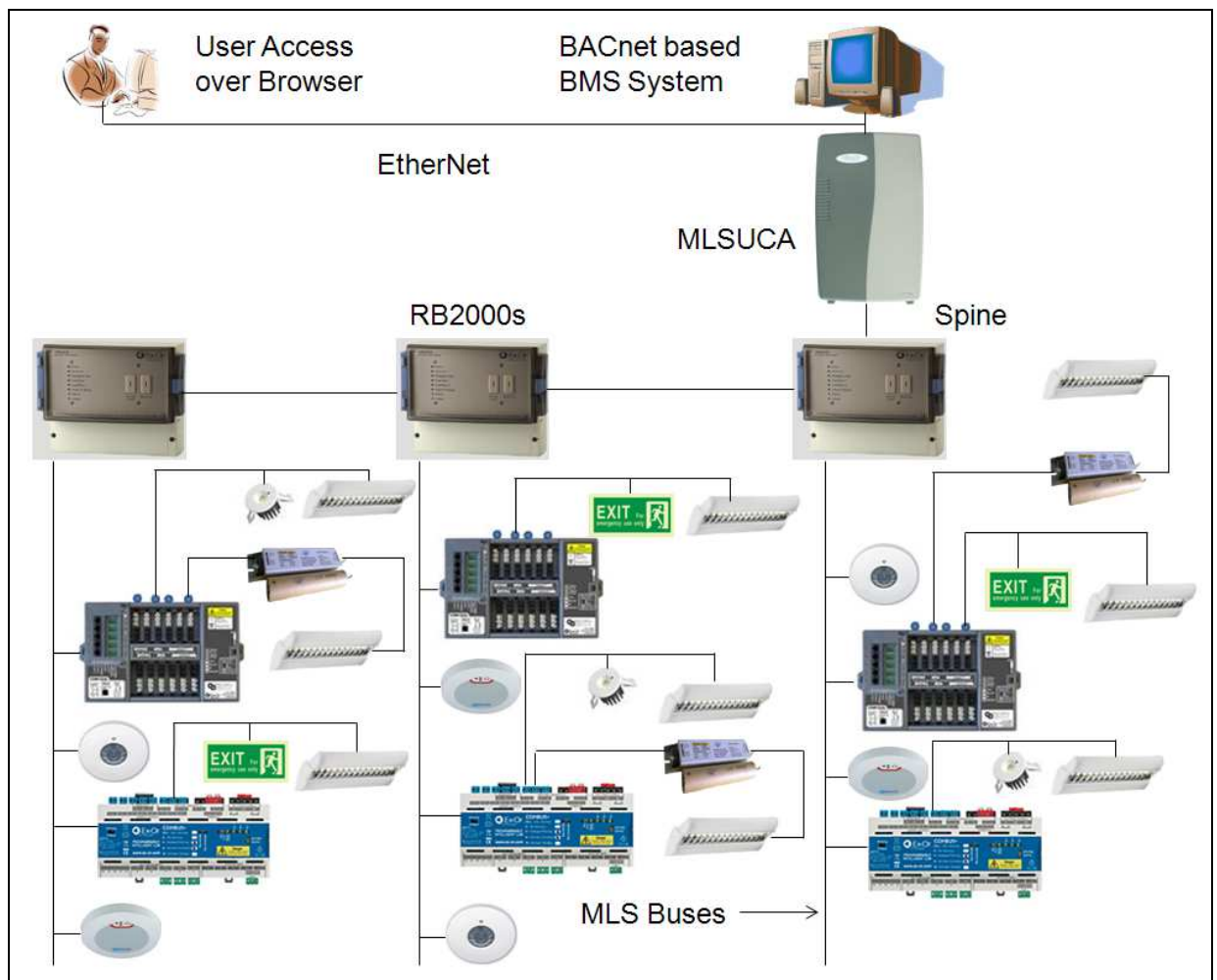
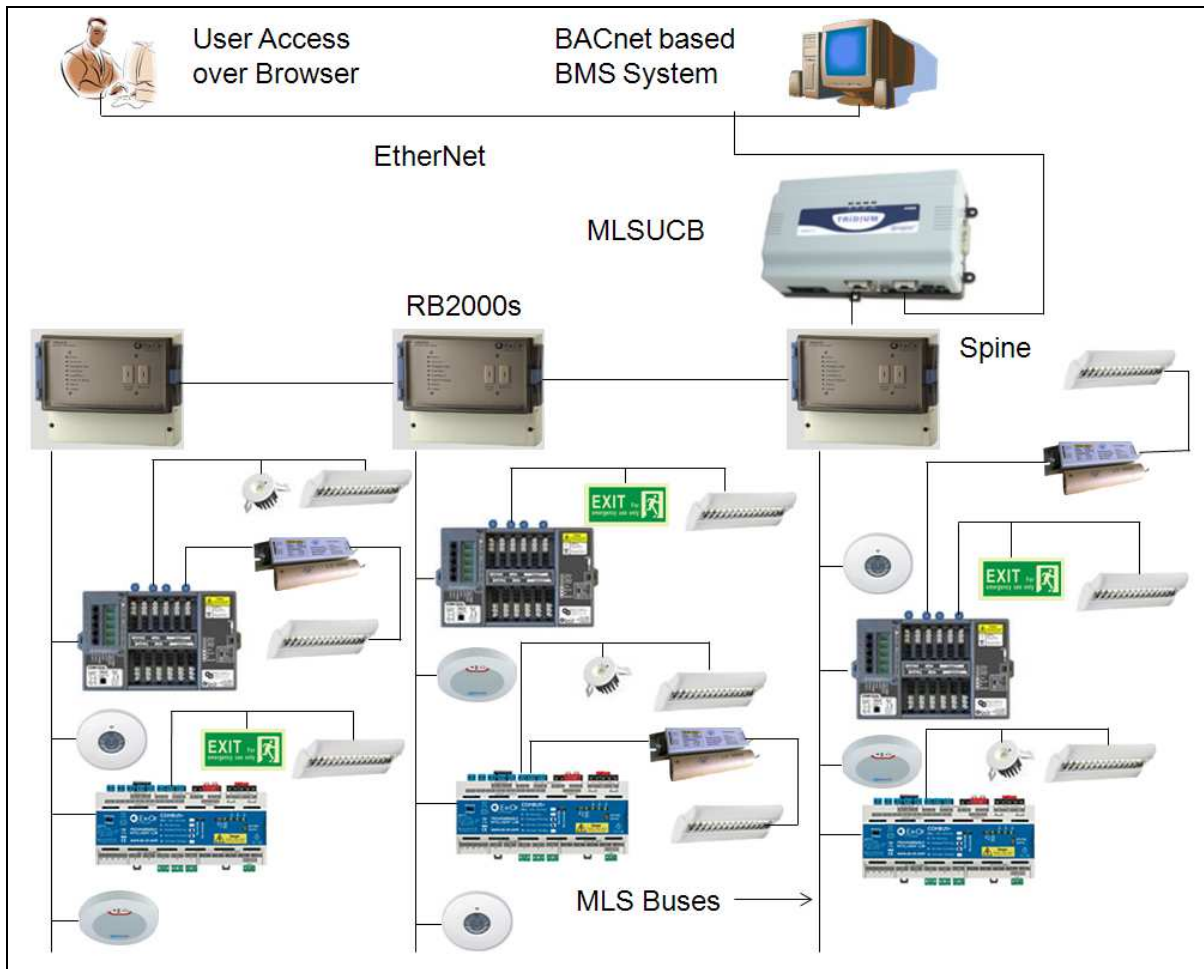


Figure 2 shows the system overview of MLSUCB.

For a given number of RB2000s and zones with or without BACnet, if the number of channels supported by MLSUCA is not sufficient, MLSUCB must be used.

Figure 2 System overview (MLSUCB)

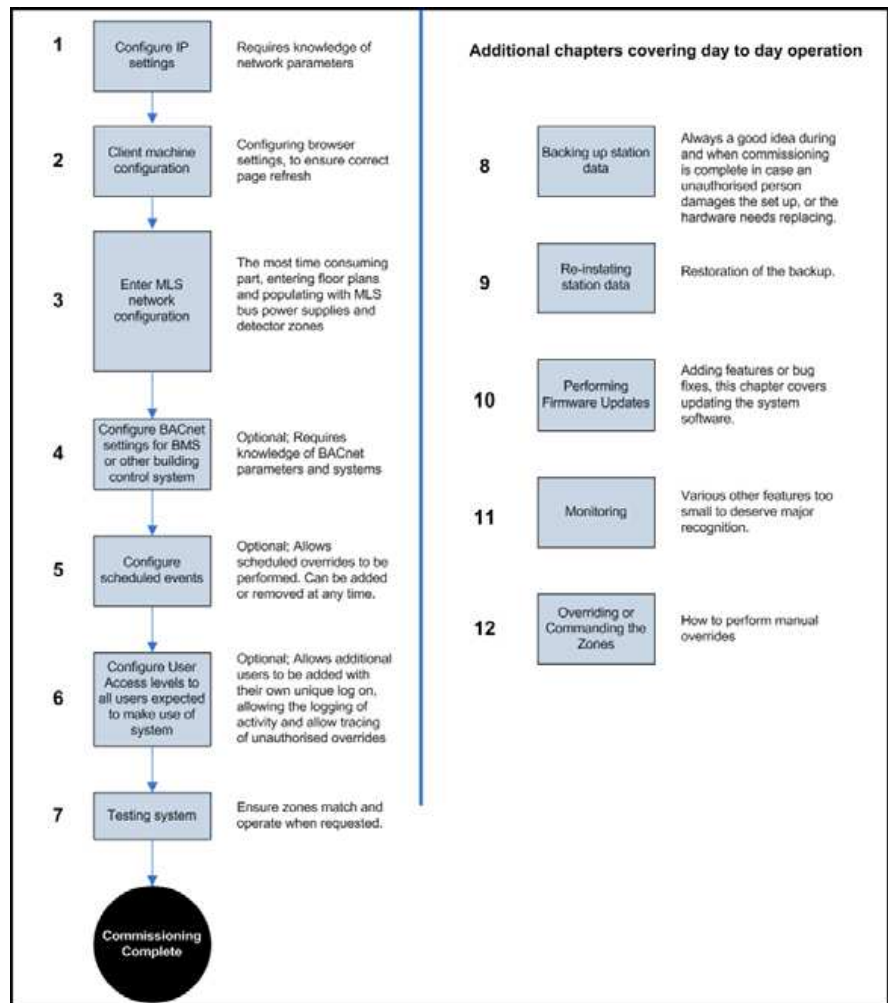


Commissioning and Operation

3

The following is an illustration of the steps in the MLSUCA/B commissioning process.

Figure 3 Commissioning Process



Setting the MLSUCA/B IP address

The MLSUCA/B comes with a default IP address: 192.168.1.12n, where n is the last digit of the serial number located on the carton label as shown in figure.3.

Figure 4 IP Address



The serial lead supplied and Windows HyperTerminal are needed to change the IP address or to enable DHCP. If your computer does not have an RS232 serial port, purchase a USB to RS232 converter available from most computer retailers.

To reconfigure IP settings

- 1 Connect the MLSUCA/B to a computer using the RS232 null modem cable supplied.
- 2 On that computer choose **Start > All Programs > Accessories > Communications > HyperTerminal**.
The **Connection Description** window appears.

Figure 5 Connection Description window



- 3 In the **Name** box, type a name for the connection and click **OK**.
The **Connect To** window appears.

Figure 6 Connect To window



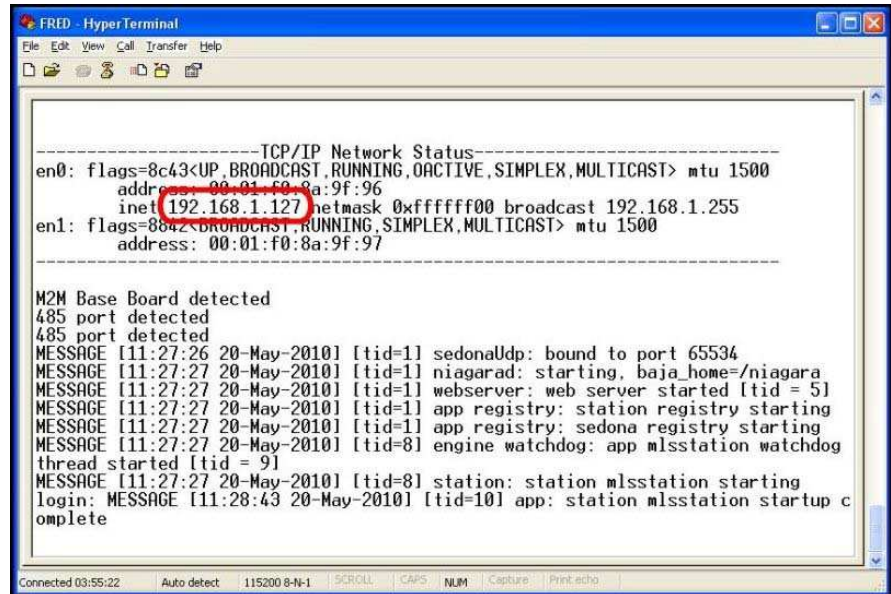
- 4 Select the port connected to the MLSUCA/B from the **Connect using** drop-down list and click **OK**. If using an RS232 to USB converter, select the COM port assigned to this device.

Figure 7 COM1 properties window



- 5 Select the required port setting of **115200** and click **OK**.
- 6 With the HyperTerminal session active, restart the MLSUCA/B by powering it down. Wait for all the LEDs to extinguish and then wait another five seconds before powering it up again.
- 7 Do not press any key. Wait until the login prompt appears.

Figure 8 HyperTerminal session



- 8 Type the user name as **tridium** and press the **Enter** button on the keyboard.
- 9 Type the password as **niagara** and press the **Enter** button on the keyboard.

Figure 9 HyperTerminal session



3 – COMMISSIONING AND OPERATION

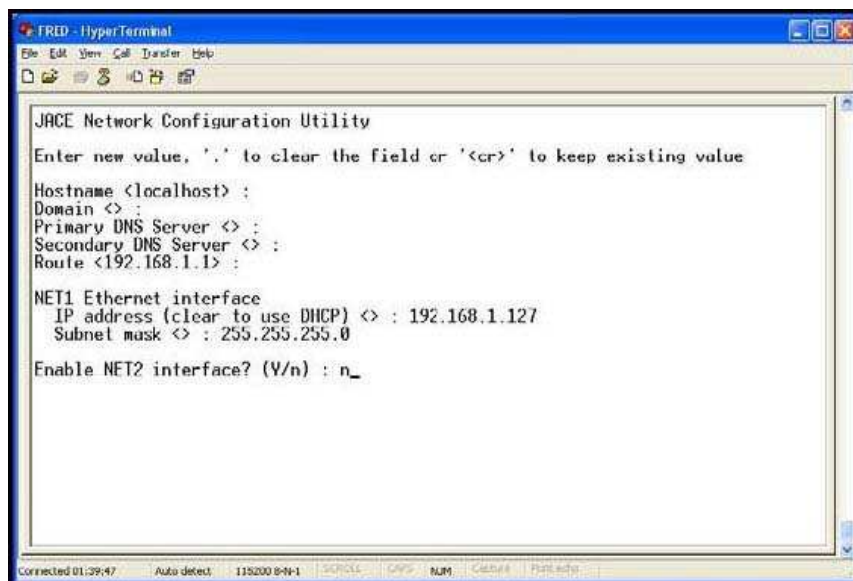
- 10 When prompted to **Enter Choice**, type **2** and press the **Enter** button on the keyboard.
- 11 Follow the instruction provided by the HyperTerminal prompt to set the IP address. Hostname, Domain, Primary, and Secondary DNS servers can be specified here.

Figure 10 HyperTerminal session



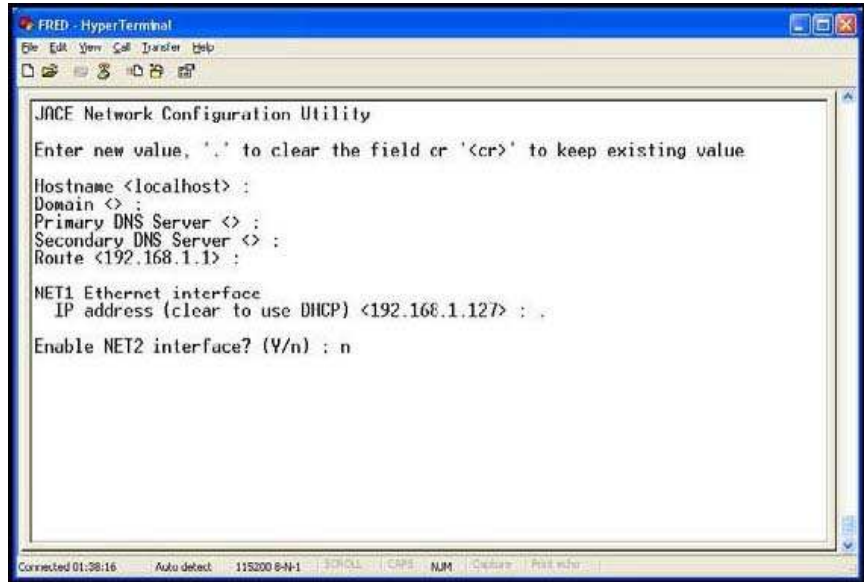
- 12 If a fixed IP address is used, enter the Subnet Mask details too as shown.

Figure 11 HyperTerminal session



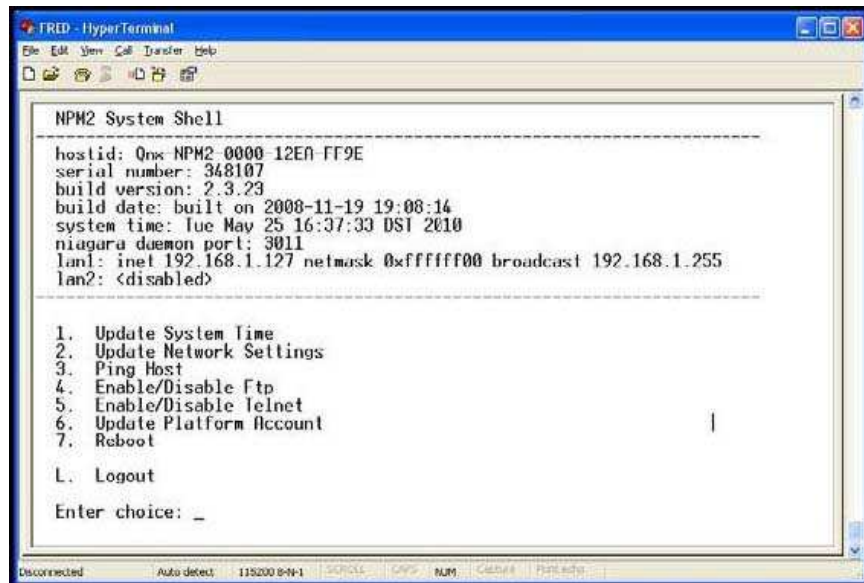
- 13 If you prefer DHCP, type a full stop after the IP address. You need not specify the Subnet Mask in this case.

Figure 12 HyperTerminal session



- 14 In either case, make sure NET2 remains disabled by typing **n** when prompted to **Enable NET2 interface? (y/n)**.
- 15 When you are satisfied, save your settings. The main menu will be displayed.

Figure 13 HyperTerminal session



- 16 Select **7** for the system to reboot and the settings to be applied. It will take about 4 minutes for the system to reboot and the MLS application to run. Meanwhile, you can track the progress using the HyperTerminal.

Configuring the client machine

The client machine is the computer from which you launch the MLS application using a web browser. This will require the client machine to have a network address which is compatible with the IP address of the MLSUCA/B. See the section, “Setting the MLSUCA/B IP address” to configure the MLSUCA/B to match the network requirements. So, the assumption here is that the client machine is already configured. Contact your network administrator for further help on this subject.



Note

The recommended internet browser is Microsoft IE 7 or above.

No page caching

For correct operation, it is recommended that page caching is disabled. To disable page caching in Internet Explorer and most mainstream browsers:

- 1 Launch the web browser (for example: Internet Explorer).
- 2 From the menu bar, choose **Tools > Internet options**. The **Internet Options** window appears.
- 3 From the **General** tab, click **Settings** under **Browsing History**. The **Temporary Internet Files and History Settings** window appears.
- 4 Select the **Every visit to the page** option for newer versions of the stored pages section.

This process may vary slightly depending on the browser you are using, but browsers would honour this system setting.

Launch and log on



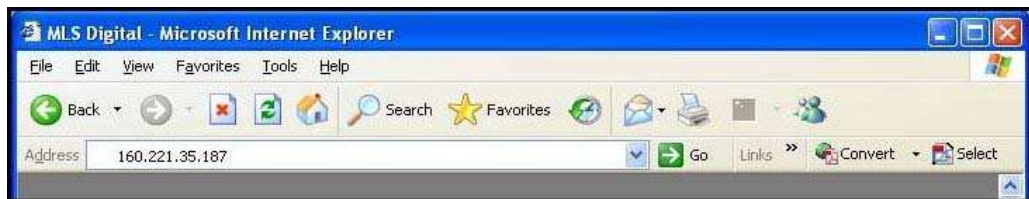
Note

Wait 4 minutes from when power is connected to the MLSUCA/B before logging on to it.

To log on to MLSUCA/B:

- 1 With the network configuration of the client machine configured correctly, open the web browser and enter the URL (in this case the IP address) to launch the MLSUCA/B.
- 2 Press the F5 key until you see the login screen.

Figure 14 Internet explorer either IP



- 3 On the Login screen, type **sysAdmin** as the Login Name and **!Sys!Admin** as the Password.

Figure 15 Login Screen



- 4 Click Login.
The MLS main page appears.

**Note**

To view in full screen mode, press the F11 button on the keyboard.

A favorite can be created to remember this address, but it is recommended that this is not done until the login screen appears.

Logging out

To log out from the application, click **Logout** on the top right corner of the screen.

Online help

The online help is context sensitive and is available on all pages.

- To launch the online help select the appropriate node from the left pane of the MLS front end Application and click Help button on the top right corner of the screen.

Configuring the MLS network

About floor plans

Give careful consideration to the floor plan that you wish to have displayed. This is important for clarity in conveying the locations and relationships of lighting zones to those who will be using the system. If the system will be used extensively to issue manual overrides, then the floor plan needs to be very clear. If different personnel will be responsible for different areas, then split the floor plan into their respective areas so that they can view the area for which they are responsible in its entirety. Depending on how the system was wired, there may be multiple RB2000s spanning these areas. Pseudo-floors can be added to represent the different areas within and across floors rather than representing a single entire floor. This is useful when the areas are very large with a considerable number of zones in each.

Consideration should be given also to the sizes of the rooms being depicted in the plan, as you will need to be able to locate descriptive labels within each zone, typically, either a room number or a room function name.

The subject of good graphic design is beyond the scope of this document but some of the factors you should consider are listed below.

- Personal preferences: Solid lines over hollow walls, furniture, or architectural features may be desired. All manner of things may be desired on the plan. If customers are likely to see it, you may wish to put their company logo on the plan and mark fire exits. It's simply a question of how the system will be used, whether as an automatic control system requiring little input from operators, or being continually managed by manual intervention.
- Orientation of the plan: Will the operator understand their relationship to the plan. Consider putting a compass on the plan to show orientation.
- Color: Is the operator color blind?; Red-Green color blindness is most common but other types exist; e.g. using red text on a green background may not suit everyone.
- Poor contrast can cause eye strain, so ensure it can be easily read by those using it.
- Display type and location: If the display is used within a security room with CCTV monitors, bright floor plans may cause a distracting glare and cause eye fatigue. If, on the other hand, a reflective display is used in a bright lobby, a white background with dark text may work best to lessen the effect of background reflections.

- Area names: You can add zone names within the application but you may also wish to add larger area names to indicate the functions of particular parts of the building.
- File format should be in JPEG, and try to keep image size as low as possible, as large files will consume the solid state memory on the MLSUCA/B. A typical image size is either 1600x1200 pixels or 1920x1200 pixels for wide screen monitors, less if smaller displays are being used. The size will be driven by the floor plan in part, so use best judgment.

Examples of floor plans are illustrated below. Zone number and RB2000 address wouldn't necessarily have to be displayed, but you will need this information to set the system up.

Figure 16 Floor Plans with low glare

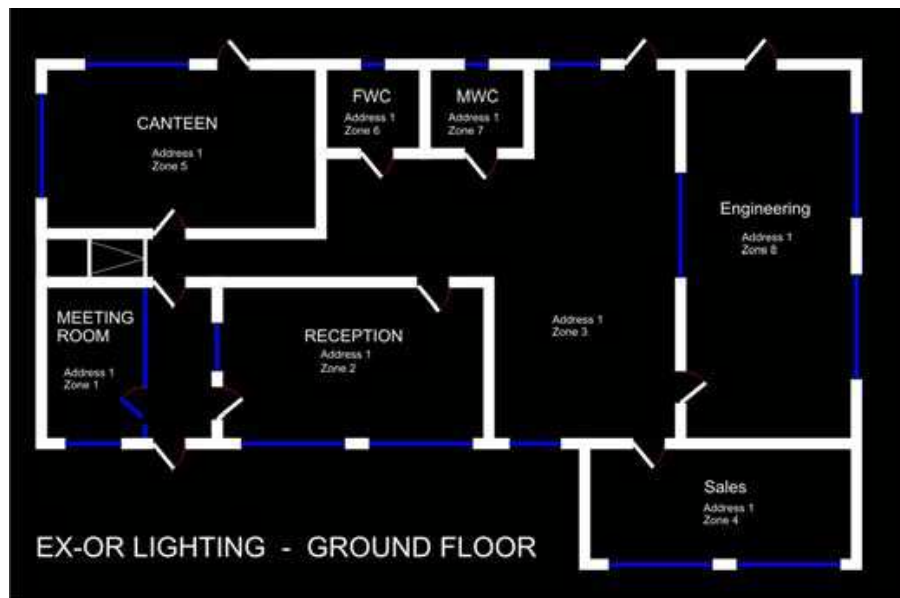
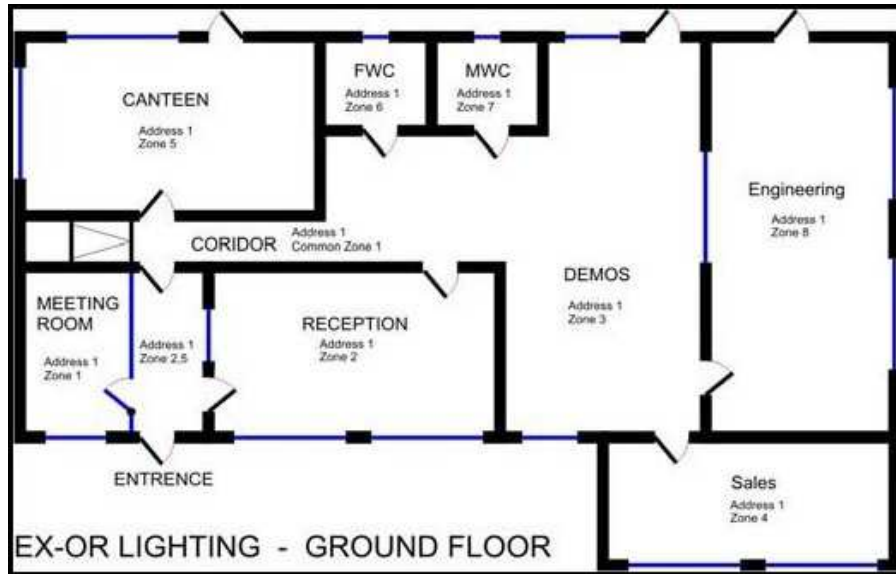


Figure 17 Floor Plans with inverted background and text color



Configuration

The Configuration tab helps you to configure the information related to the following.

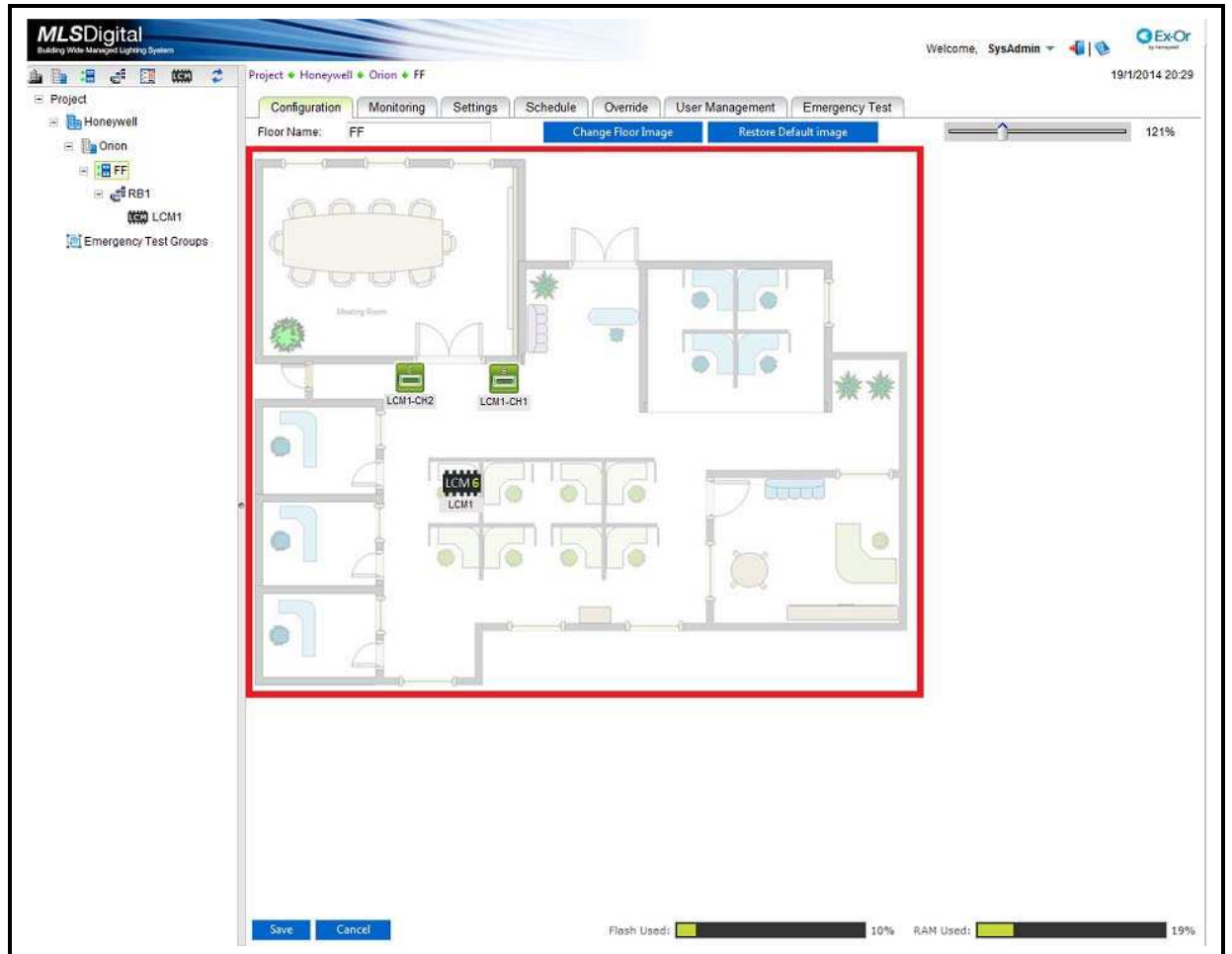
- Images of a site and building
- Floor plan
- RB2000 associated with floor plan
- Zones in floor plan, associated with RB2000
- LCMs associated with RB2000
- Emergency Test groups




Note

The zoom level of the floor image can be modified using the zoom slider bar, which is available at the top right corner of the image. After setting the desired zoom level, you can save it to retain the zoom level henceforth. The recommended optimal screen resolution for a monitor with 4:3 aspect ratio is 1200x800 and for a 16:9 aspect ratio is 1280x768.

Figure 18 Configuration tab




Adding a building

1. Click the **Add Building**  icon on the left pane
Or
Right click the Site name and click **Add Building**.
2. Click **Save**.

Adding a floor

To add a floor:

- 1 Click the Add Floor icon  on the left pane.
or
Right click the building/controller name and click **Add Floor**.
The floor configuration screen appears on the right pane.
- 2 Type a name in the **Enter floor name** box.
- 3 Click **Browse**.
- 4 Select the appropriate floor plan created through any appropriate software package: AutoCAD, CorelDraw, or ProE. So long as the final file is an exported JPEG and fulfils the requirements for the floor plan discussed in the section “About floor plans”.




Attention

Do not click anywhere on the screen before saving the floor plan.

- 5 Click **Save**. The properties screen appears on the right pane.

Adding an RB2000

To add RB2000:

1. Click the **Add RB2000** icon  on the left pane.
or
Right click the building/floor name and click **Add RB2000**.
The configuration screen appears on the right pane.
2. Type a name in the **RB2000 Name** box.
3. Select the **Address**.
4. Click **Save**.



Note

In the MLS application, address setting for the RB2000 is in decimal while for the RB2000 rotary switch, it is in hexadecimal. Note that in the MLSUCA/B application, address can be set only up to 100 and hence the address setting on the rotary switch must be restricted to 64.

Adding a zone

To add a zone:

1. Click the **Add Zone** icon  on the left pane.

or

Right click the RB2000/Floor name and click **Add Zone**.

The dialog box for the zone type appears on configuration screen on the right pane.

2. Select the zone type and click **OK**.
3. Enter the zone properties in the properties box on the right side.
4. Click **Save**.

Discover RB2000

By discovering RB2000, all the configured RB2000(s) on the spine network are auto discovered. This can be initiated by right clicking the building name. The completion percentage of the discovery process is shown by the progress bar on the status bar. The list of discovered RB2000(s) can be viewed under **View Discovered RB2000(s)**. By adding the discovered RB2000, the RB2000(s) appears in the project tree.



Note

Discovering RB2000s can be a time consuming process since the application has to scan all the RB2000(s) that are configured on the spine network.

Discover LCM

By discovering LCMs, all the configured LCM(s) on the MLS network are auto discovered. This can be initiated by right clicking the RB2000/Floor name. The completion percentage of the discovery process is shown by the progress bar on the status bar. The list of discovered LCM(s) can be viewed under **View Discovered LCM (s)**. By adding the discovered LCMs, the LCMs appears in the project tree.



Note

Discovering LCMs can be a time consuming process since the application has to scan all the LCM that are configured on the MLS network.

Discover channels

By discovering channels, all the configured channels that are connected to the LCMs are auto discovered. This can be initiated by right-clicking the LCMs in the project tree. The completion percentage of the discovery process is shown by the progress bar on the status bar.



Note

Discovering channels can be a time consuming process since the application has to scan all the channels that are connected to multiple LCMs.

MLS BMS Integration

This following section gives the information necessary to integrate MLS with BMS over BACnet. It talks about the essential configuration work needing to be done in the MLS application to allow the points to be accessible over BACnet. How the MLS points and devices will be discovered by the BMS over BACnet is also explained.

Acronyms

#	Terminology	Definition
1	BACnet	Building Automation and Control NETWORKing protocol
2	BBMD	BACnet/IP Broadcast Management Device
3	MS/TP	Master Slave / Token Passing
4	UDP	User Datagram protocol

BACnet Terminologies

#	Terminology	Definition
1	Device Object ID	BACnet Device instance number, unique across the entire BACnet internetwork (range is 0 to 4,194,302).
2	Network number	BACnet network number for the network segment to which you are connecting. If this is an existing BACnet installation, make sure you use the same network number already in use.
3	UDP Port	UDP port 47808 decimal (0xBAC0 in hexadecimal) is used. If your BACnet/IP installation is using another UDP port, enter this port number in the UDP Port property.
4	MSTP Address	Set the Port Name to the RS-485 port to be used on the MLSUCA/B.
5	Max Info Frames	Controls how many messages are sent before passing the token, and may be increased up to 50 to increase performance in some cases.
6	Max Master	Address Number of the highest known master device on the network.

Settings to be done from MLS

Prerequisites to expose MLS points to BACnet

- IP of the server where MLS application is hosted.
- The device object ID for MLS BACnet device.
- Network number for the MLS BACnet network over IP.
- If the BMS system is in a different subnet, then the IP of the BMS server and its UDP address.

Configuration from MLS Application

To configure the BACnet network:

- 1 Select the **Settings** Tab.
- 2 Select the **BACnet** checkbox. The BACnet properties box will expand.
- 3 Give the device ID for the BACnet network to communicate with other BACnet devices in the network.
- 4 To make this device communicate to other devices enable IP/MSTP.

Figure 19 BACnet settings page in MLS

The screenshot shows the 'Settings' tab in the MLS Digital application. The 'BMS Protocols' section has the 'BACnet' checkbox checked. The 'BACnet Properties' section is expanded, showing fields for 'Device Object Id' (12), 'Network Port Type' (IP and MSTP checked), 'IP Port' (Network Number: 21, UDP Port: 0xBAC0, IP Device Type: Standard), and 'BACnet Export Fixed Text' (Real Time Occupancy Text: OccupancyStatusPoint, Timed Occupancy Text: TimedOccupancyStatusP, Command Point Text: CommandPoint, Switch Input Text: SwitchInputPoint, Global Zones Text: GlobalZone). Other sections include 'Date Time Settings' (System Date Time: Modify, TimeZones: GMT (+0)), 'System Utilities' (Reboot Server, Install Update), 'Email Settings' (Enable Email Service, Email Server, Email Address), 'Configuration' (Backup, Restore), 'Logs' (Enable, Get Logs), and 'Admin Settings' (Network Settings). The interface includes a 'Save' and 'Cancel' button at the bottom left.

To configure a BACnet/IP port:

- 1 Provide the network number for the BACnet network. This network number is used for the BACnet devices to be part of that network.
- 2 UDP port: Give the UDP port number through which the device communicates to the other devices in the network.
- 3 If the device wants to communicate over subnet, select BBMD type, provide the BBMD address (IP: UDP port) of the other device in another subnet.

Figure 20 BACnet/IP configuration

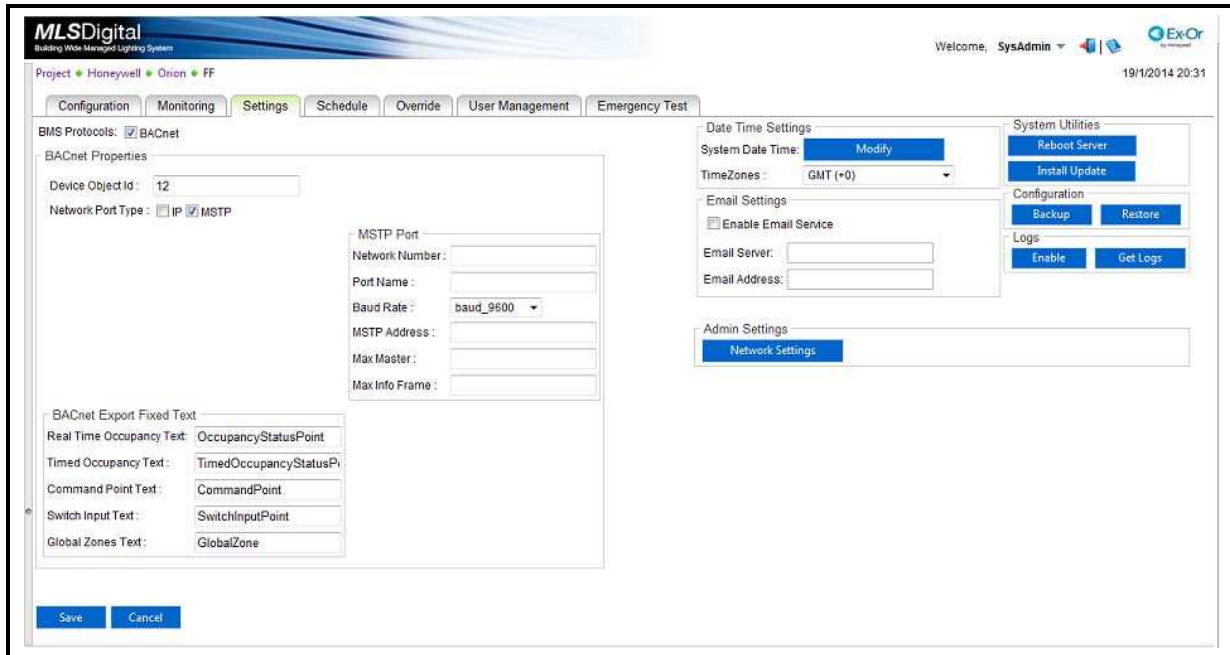
The screenshot displays the MLSDigital BMS configuration interface. The main window is titled 'Project: Honeywell Orion FF'. The 'Settings' tab is active, showing 'BMS Protocols: BACnet' checked. Under 'BACnet Properties', the 'Device Object Id' is set to 12, and 'Network Port Type' is set to 'IP' (with 'MSTP' also checked). The 'IP Port' section includes 'Network Number: 21', 'UDP Port: 0xBAC0', and 'IP Device Type: Standard'. Below this, 'BACnet Export Fixed Text' fields are visible, such as 'Real Time Occupancy Text: OccupancyStatusPoint'. On the right side, there are sections for 'Date Time Settings' (System Date Time: Modify, Time Zones: GMT (+0)), 'Email Settings' (Enable Email Service checkbox, Email Server, Email Address), 'System Utilities' (Reboot Server, Install Update), 'Configuration' (Backup, Restore), and 'Logs' (Enable, Get Logs). An 'Admin Settings' section contains a 'Network Settings' button. At the bottom left, there are 'Save' and 'Cancel' buttons.

To configure a BACnet/MSTP port:

- 1 Provide the following information:
 - **Network Number:** The network number for the BACnet network. This network number is used for the BACnet devices to be part of that network.
 - **Port Name:** Provide the name of the port at which the BACnet devices are connected to the MLSUCA/B via the RS-485.
 - **Baud Rate:** Specify the Baud rate at which the MLSUCA/B communicates with the devices connected over RS 485.
 - **MSTP Address:** Provide the unique BACnet MAC address on that MSTP trunk, in decimal, with valid range from 0 (default) to 127.
 - **Max Master:** Set the highest known master device on the network, with possible room for expansion if needed.

- **Max Info Frames:** Controls how many messages are sent before passing the token, and may be increased up to 50 to increase performance in some cases.

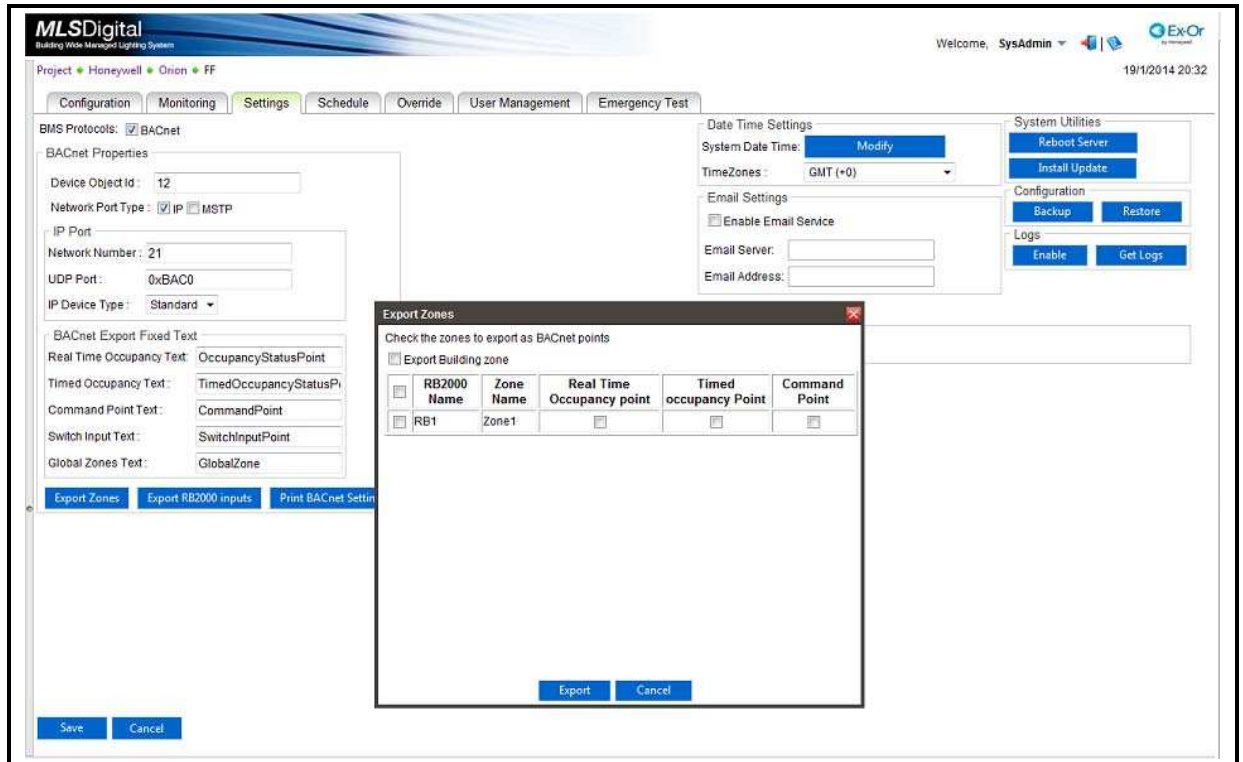
Figure 21 BACnet/MSTP Configuration



To export MLS points to BACnet:

- 1 Click the **Export zones** link.
- 2 In the resulting dialog box, select the points of a zone that need to be exported as BACnet points.
- 3 All selected points will be exported to BACnet.

Figure 22 Exporting MLS points to BACnet



To discover MLS points from BACnet:

- 1 Discover BACnet devices from the BMS system.
- 2 MLS BACnet network will appear as mlsstation_network_number.
- 3 This will list all the BACnet objects from within the MLS network.

Details of MLS BACnet objects

Real Time Occupancy point

This point represents the detector occupancy status. Whenever a movement within a zone is detected, that zone's status is set to occupied and this status persists for 10 seconds after the last detection of movement, following which the zone status reverts to unoccupied. This is a BACnet boolean input point. The present value of this point represents the zone's real time occupancy status; it is either occupied or unoccupied.

Timed Occupancy point

This point represents the status of the zone and is driven by detector status with reference to the configured OFF delays. This is a BACnet boolean input object. The present value represents the status occupied or unoccupied.

Command point

This point is a writable BACnet analog point. The commands can be written to any priority slot of the analog point. If the values are written to priority 8, 14, 15, and 16, the internal MLS schedules and overrides will be affected.



Note

To clear the command on a particular priority level, command 0 should be written to the same priority slot. For example, if a zone command point is written on priority X with command X, to get back the same zone to auto state, command 0 should be written to the same priority X.

The description of all the commands that can be sent for MLS BACnet points are listed below.

Commanding options

BMS Commands	Description - from MLS device's point of view - typically this would be a presence detector.	
0	Stops whatever it was doing.	
1-100	Each value from 1 to 100 represents the illumination intensity level to be set for the points. (1% to 100%)	
101	Recall Scene 1	This is the Regulating Scene. During this scene the detector uses its photocell to try to maintain a programmed level of luminance. For scenes 2-6, the detector ignores its photocell and puts its luminaires to a programmed fixed output for the duration of its occupancy period.
102	Recall Scene 2	
103	Recall Scene 3	
104	Recall Scene 4	
105	Recall Scene 5	
106	Recall Scene 6	
107	On: go to entry scene may be programmed to off!).	
108	Off: switch off and refresh timer i.e., detectors maintained off by occupancy.	

109	Sustain: If detector's timer is not triggered, trigger it and go to entry scene. If timer is already running, it means 'refresh timer and carry on with whatever state you're in'. This is the command that PIRs routinely put out on the MLS bus when they see movement.	
110	Up: The light level increases in the same way as if an infrared remote control was pointed at the detector.	These commands should be avoided because they are very bandwidth-hungry on the MLS field bus. Use command 0Fh instead. This will cause a quick fade to the new level.
111	Down: The light level decreases in the same way as if an infrared remote control was pointed at the detector.	
112	Walk test: Presence detector time-outs become changed temporarily to 10 seconds. They revert to the programmed value automatically after 5 minutes.	
113	Cancel walk test: Return to programmed time-out now if you can't wait 5 minutes for it to happen automatically.	
114	Partition: Detectors cease communication with any zones programmed into the 3rd and 4th positions in their memory.	
115	Rejoin: Cancel partition.	
116	Not used.	
117	Set Scene 0 Restores factory default scenes. Defaults are 80%, 40%, 20%, 10%, 5% for scenes 2, 3, 4, 5, 6 respectively. Does not affect scene 1.	
118	Set Scene 1 The detector takes a reading from the photocell and stores it as its new regulating aiming-point.	
119	Set Scene 2	The current output power is stored as a fixed-output scene.
120	Set Scene 3	
121	Set Scene 4	
122	Set Scene 5	
123	Set Scene 6	

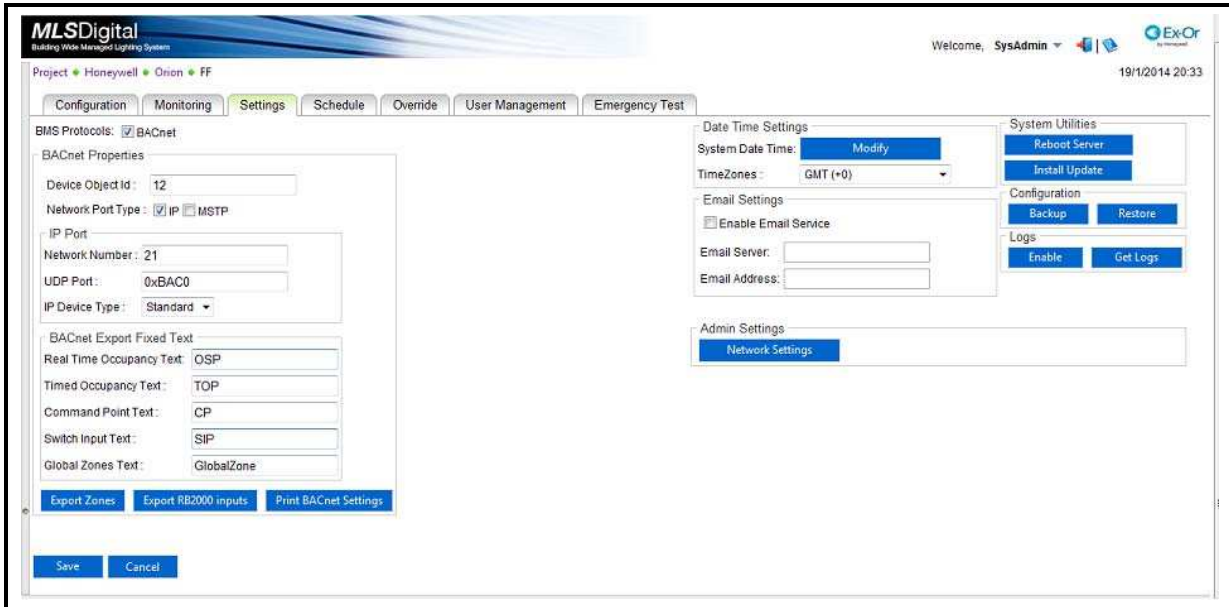
Exported BACnet point naming convention

The exported zones are named in the below mentioned format

<Parent RB2000 name Configured> _ <BACnet Export Text> _ < Zone name configured>

The <BACnet Export Text> information is available under Settings as shown

Figure 23



For example, the selected points of zone1 under RB1 are named as shown below.

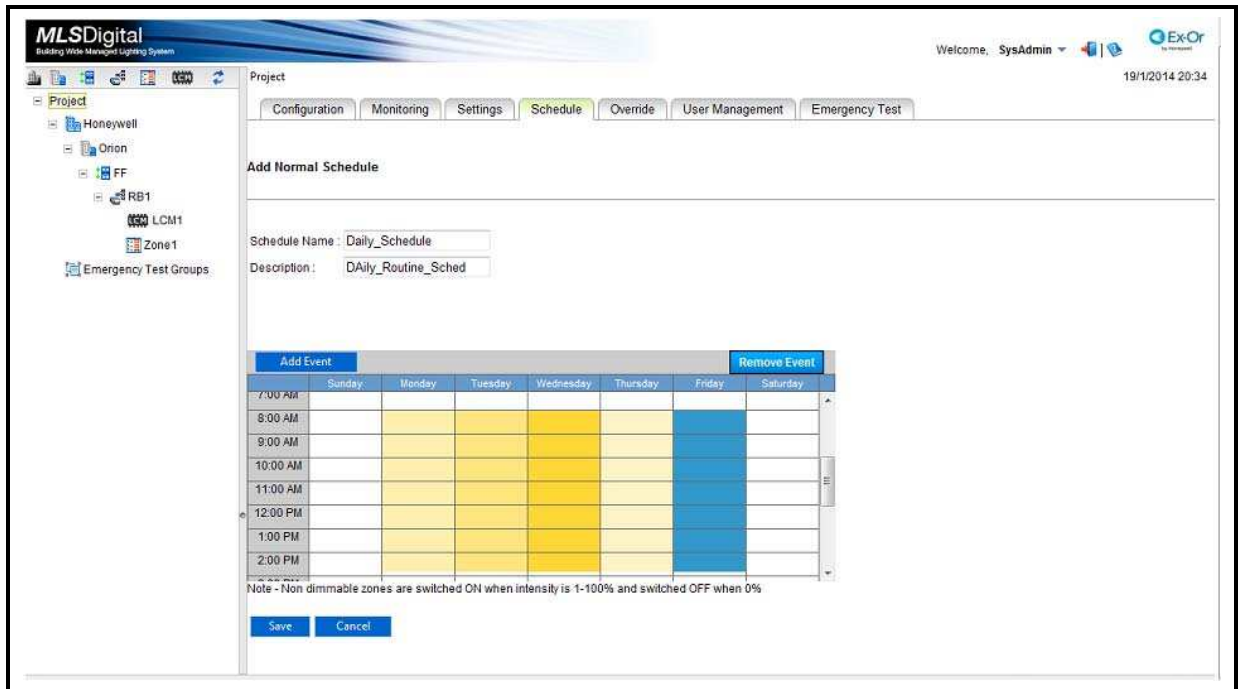
Figure 24

Bacnet Discover Points					
Discovered					
Object Name	Object ID	Property ID	Index	Value	Description
mlsstation_12	device:12	systemStatus		Operational	Local BACnet Device object
RB1_OSP_Zone1	binaryInput:0	presentValue		Inactive	Zone1 zone OSP
RB1_TOP_Zone1	binaryInput:1	presentValue		Inactive	Zone1 zone TOP
RB1_CP_Zone1	analogOutput:0	presentValue		0.00	Zone1 zone CP

Scheduled events

The MLS front end application provides for scheduling the lighting in different areas (zones) of a premises. Schedules define the day and time when an occupancy event must occur. Schedules are the weekly calendars for the occupancy mode changes. The application provides various types of schedules to program regular days, holidays, and exceptions.

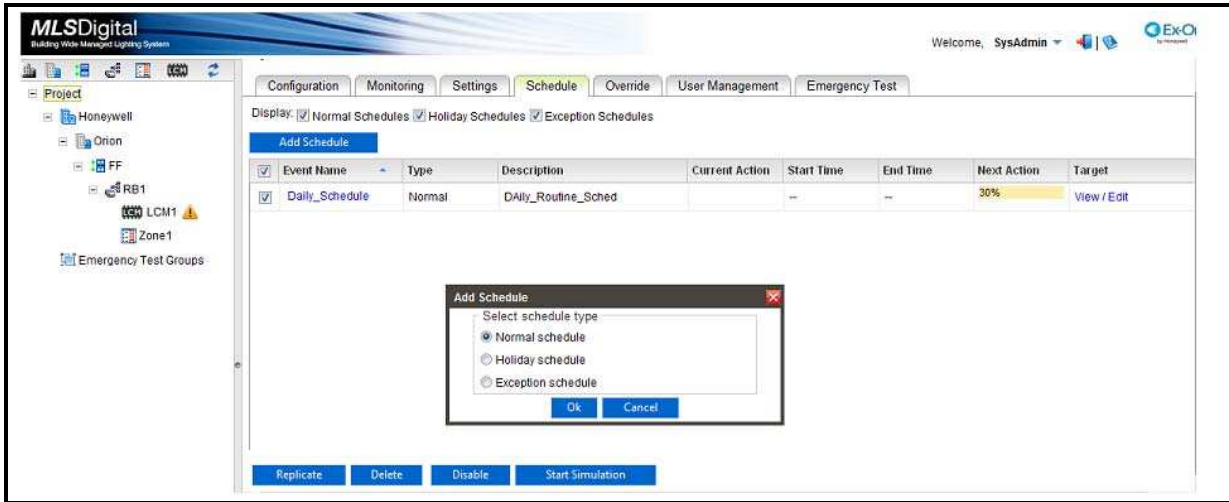
Figure 25 Scheduled events



To add a schedule:

- 1 Select the Project level in the hierarchy in the left panel to reveal the **Add schedule** button.
- 2 Click the Add **Schedule** button.

Figure 26 Add Schedule



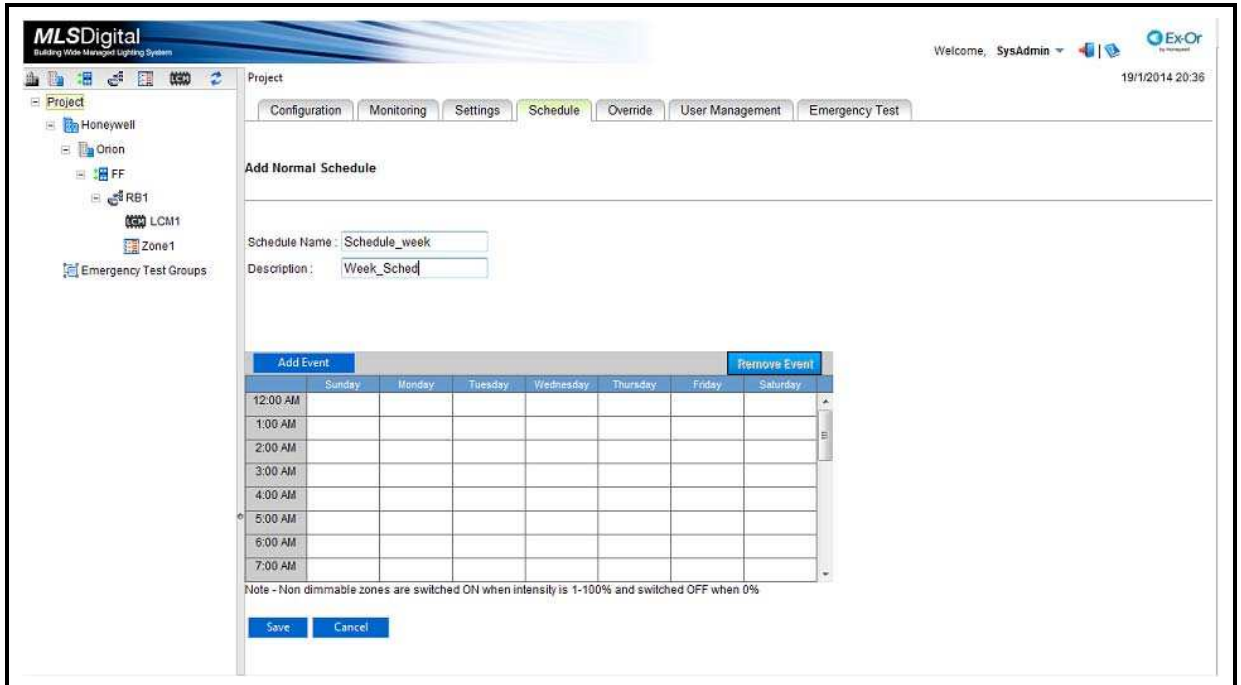
Note

The priority for the schedule are as follows:

1. Exception schedule.
2. Holiday schedule.
3. Normal schedule.

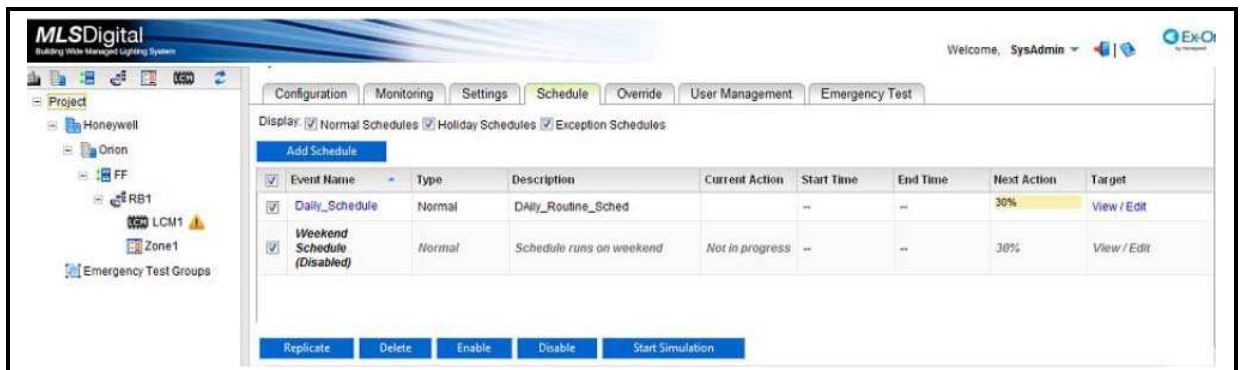
- 3 You can select either a Normal, a Holiday, or an Exception schedule.

Figure 27 Normal Schedule



- 4 You should get a schedule view for the week. Enter a suitable name and description for the schedule and left click on the desired day and time.

Figure 28 Event Details

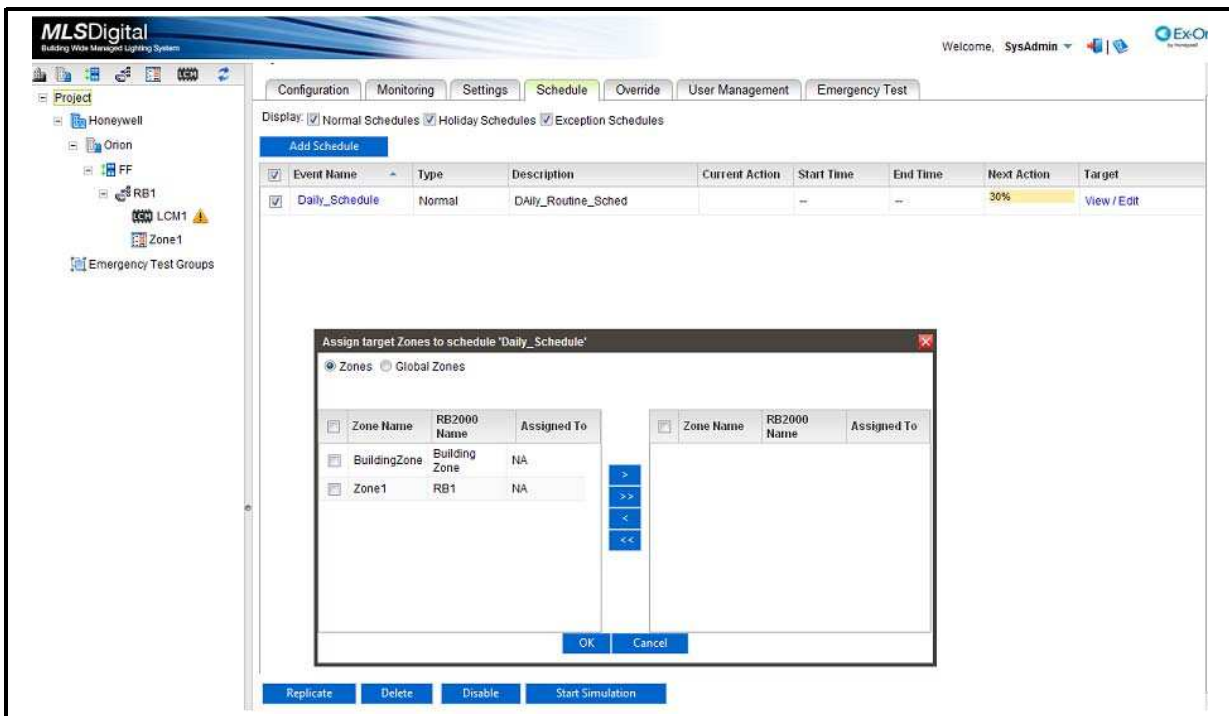


Note

If the selected event is TURN OFF or 0 % intensity then the schedule ends with an auto TURN ON. In other cases, it ends with an auto mode.

- 5 In the ensuing **Event Details** dialog box, adjust the Start and End times. Click **OK** when complete. The Event cannot span a day boundary, because the End Time must be later in hours and minutes than the start time. To create an event which extends past midnight, two schedules will need to be created. The Event must also be selected from the drop-down menu.
- 6 Click **Save**.
- 7 This enters the event into the Schedule list. You can click on the Schedule name to make changes to the Event time or type, or you can select **Target to Assign Zones**.
- 8 Clicking on **View/Edit** brings up the **Assign Zones for Named Event** as shown below.

Figure 29 Assign Zones



- 9 This allows you to add or remove zones from the Event. Click **OK** to assign and save.
- 10 The **Replicate** button allows you to copy the event, but zones will need to be assigned. To achieve this, left click in the box to the left of the Event Name. Then click **Replicate**. This can save some time when creating multiple Events for the same period. The name can be manually edited if the automated naming process is not desired.

Figure 30 Copy Events

The screenshot shows the 'Schedule' tab in the MLSDigital software. The interface includes a navigation tree on the left with 'Project' expanded to show 'Honeywell', 'Orion', 'FF', 'RB1', 'LCM1', and 'Zone1'. The main area displays a table of scheduled events with columns for Event Name, Type, Description, Current Action, Start Time, End Time, Next Action, and Target. Two events are listed: 'Daily_Schedule' and 'Weekend Schedule (Disabled)'. The 'Daily_Schedule' row has a '30%' in the 'Next Action' column. Below the table are buttons for 'Replicate', 'Delete', 'Enable', 'Disable', and 'Start Simulation'.

<input checked="" type="checkbox"/>	Event Name	Type	Description	Current Action	Start Time	End Time	Next Action	Target
<input checked="" type="checkbox"/>	Daily_Schedule	Normal	DAILY_Routine_Sched		--	--	30%	View / Edit
<input checked="" type="checkbox"/>	Weekend Schedule (Disabled)	Normal	Schedule runs on weekend	Not in progress	--	--	30%	View / Edit

- 11 To delete an Event, click on the tick boxes to the left of the Event Names you wish to remove and then click **Delete**.
- 12 The tick boxes at the top of the tab allow you to filter the list according to the type of the schedule.

User management

The User Management page is used to add, edit, or delete users and assign privileges to them based on their roles. It supports three types of user roles.

Figure 31 User Management

The screenshot shows the 'User Management' page in the MLS Digital interface. The page header includes the logo 'MLSDigital Building Wide Managed Lighting System' and the user 'Welcome, SysAdmin'. The navigation menu includes 'Configuration', 'Monitoring', 'Settings', 'Schedule', 'Override', 'User Management', and 'Emergency Test'. Below the menu are 'Add' and 'Delete' buttons. A table displays one user:

User Name	Full Name	Email	Role
SysAdmin	SysAdmin	SysAdmin@mls.com	Site Engineer

The page footer shows 'Page 1 of 1', 'Page size 10', and 'Showing 1-1 of 1'.

Site Engineer (Super User)

The Site Engineer is usually an engineer from Ex-Or or from its partner and has the privilege to create user accounts for Site Engineers, Facility Managers and Application Operators. The Site Engineer will be able to view all user accounts that are created in the application.



Note

Only one Site Engineer can be logged in at any given time. If such a user keeps the workstation idle for more than 30 minutes, the system logs out the user.

Facility Manager (SysAdmin)

The facility manager is a person managing the facility where the MLS front end application system is installed and has the privilege to create user accounts for Application Operators.



Note

Only one Facility Manager can be logged in at any given time. If a user with Facility Manager access has left the workstation without logging off and thus locked out any attempt to log in under this privilege level, he/she can be logged out by the Site Engineer.

Application Operator

The Application Operator is a person interacting with and continuously monitoring the application. An Application Operator does not have the privilege to create a user account.

The following role matrix shows the privileges of each user type.

Privilege	Site Engineer	Facility Manager	Application Operator
Create configuration information	✓	X	X
View configuration information	✓	✓	X
Modify configuration information	✓	✓	X
View user information	✓	X	X
Modify user information	✓	✓	X
View and print all system logs	✓	✓	X
Back up and restore site configuration	✓	X	X
View online monitoring information	✓	✓	✓
View/modify personal information	✓	✓	✓
Monitor occupancy statu	✓	✓	✓
Perform overrides	✓	✓	✓
Configure schedules	✓	✓	X



Note

When the system is commissioned, the default user will be SysAdmin and the password is !Sys!Admin. All users are advised to change the password after their first login.

Testing

There are a number of ways to test the system. The key methods are listed below:

- 1 Monitoring with Walk Test enabled. This is best accomplished with two people, one viewing the display while another walks a pre-agreed route around the building triggering zones in a sequence. If the Monitoring display does not show the movement in the correct sequence, you need to inspect further. However, this may not be easy or practical if there are other people on site. The use of walkie-talkies helps avoid confusion when there are other people on site and allows for re-tries.
- 2 Suspect zones can be toggled on and off with the manual override feature from the Monitoring page.
- 3 Using the HP2000 to identify zone numbers to confirm against the settings on the plan. This is usually the final check when it is found that a detector doesn't seem to be visible on the plan.

Backing up station data

To back up the configuration files

- 1 Open the web browser and type the MLS Front End Application's Server name in its **Address Bar** and press the **Enter** button on the keyboard. For example, if the server name is MLSServer then type **MLSServer** in the address bar.
The login page of MLS front end application appears.
- 2 Type **sysAdmin** in the **User Name** box and **!Sys!Admin** in the **Password** box.
- 3 Click **Login**.
The MLS main page appears.
- 4 Click the **Settings** tab.
The settings page appears.
- 5 In the **System Settings** area, click the **Backup** button.
The **File Download** window appears.
- 6 Click **Save**.
The **Save as** window appears.
- 7 Select the required location and click **Save** to save the files.
The configuration files are saved.

Reinstating station data

To restore the configuration files

- 1 Open the web browser and type the MLS front end application's **Server Name** in its **Address Bar** and press the **Enter** button on the keyboard. For example, if the server name is MLSServer, type **MLSServer** in the Address Bar.
The login page of MLS Front End Application appears.
- 2 Type **sysAdmin** in the **User Name** box and **!Sys!Admin** in the **Password** box.
- 3 Click **Login**.
The MLS main page appears.
- 4 Select the **Settings** tab.
The settings page appears.
- 5 In the **System Settings** area, click the **Restore** button.
The **Restore Configuration** window appears.
- 6 Click **Browse** to locate the backup file.
- 7 Click **Restore** on the **Restore Configuration** window.
A message appears prompting you to restart the application.
- 8 Click **Yes** to restart the application and the MLSUCA/B box.



Note

If you click **No**, the configuration files are not restored.

The MLSUCA/B box restarts and the configuration files are restored.

Performing firmware updates

**Note**

Skip this step if up-grading is not required.

To upgrade the application:

- 1 Open the web browser and type the MLS front end application's Server name in its **Address Bar** and press the **Enter** button on the keyboard. For example, if the server name is MLSServer then type **MLSServer** in the **Address Bar**.
The login page of MLS Front End Application appears.
- 2 Type **sysAdmin** in the **User Name** box and **!Sys!Admin** in the **Password** box.
The MLS main page appears.
- 3 Click **Login**.
The MLS main page appears.
- 4 Select the **Settings** tab.
The settings page appears.
- 5 In the **System Settings** area, click the **Install** button.
The **Install Update Package** window appears.
- 6 Click **Browse** to locate the upgraded file.
- 7 Click **Install** on the **Install Update Package** window.
The application is upgraded.

The system will reboot which will take around 4-5minutes at which point you will require to log in if you wish to continue to use the system.

**Note**

If there are multiple patches, the MLSUCA will restart after the installation of each patch. The system will take around 4-5 minutes for each reboot.

Monitoring

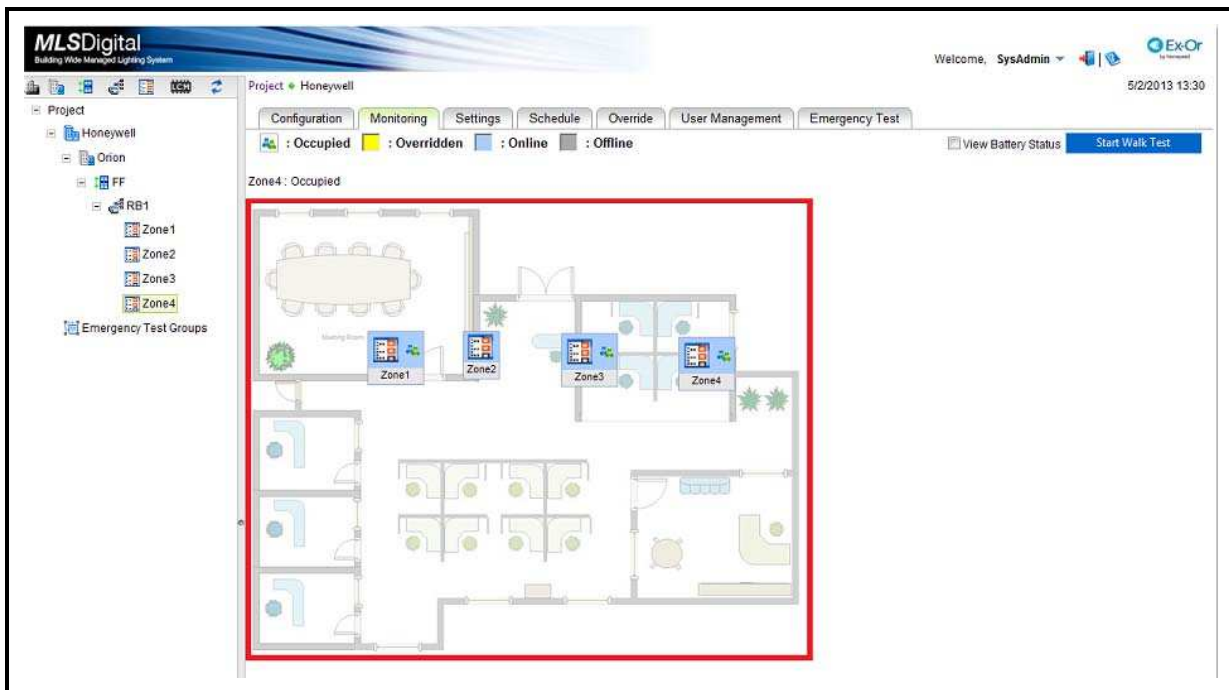
The Monitoring screen helps you to monitor the current occupancy status of all the zones in a floor. It also provides the accumulated occupancy hours for each zone in every floor of a building.



Note

This page can be monitored by the Site Engineer, Facility Manager, and an Application Operator.

Figure 32 Monitoring

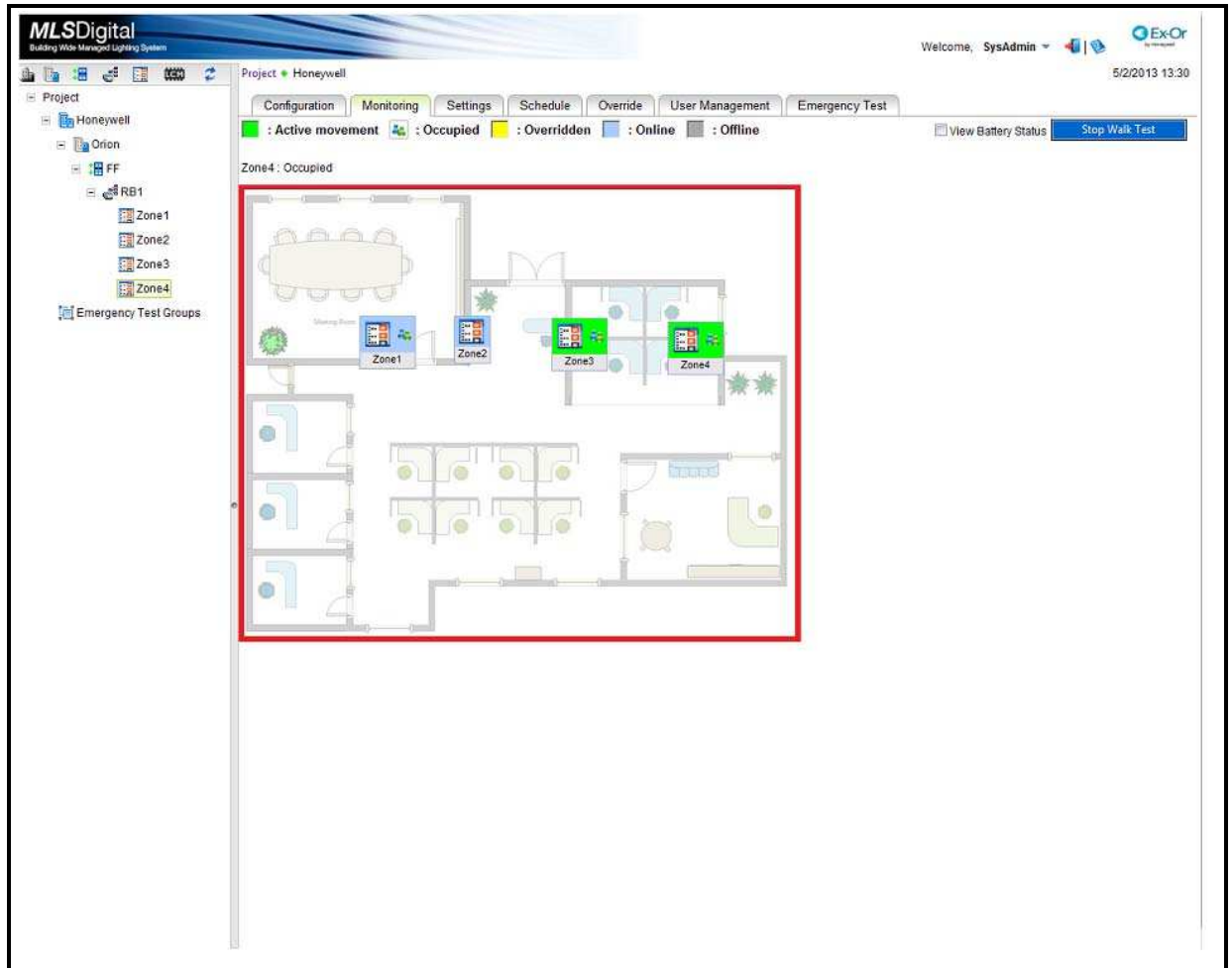


The colors represent the current state of the zones as follows:

- Grey: Zone can't be seen. RB2000 not communicating.
- Blue: No movement; so lights are off.
- Yellow: Movement seen and lights are on.

A useful feature to check presence in rooms is the Walk Test. To enable, click on the Walk Test **Start** button. This introduces green to represent when detectors see movement, and the zone stays green only while movement is being seen.

Figure 33 Walk Test



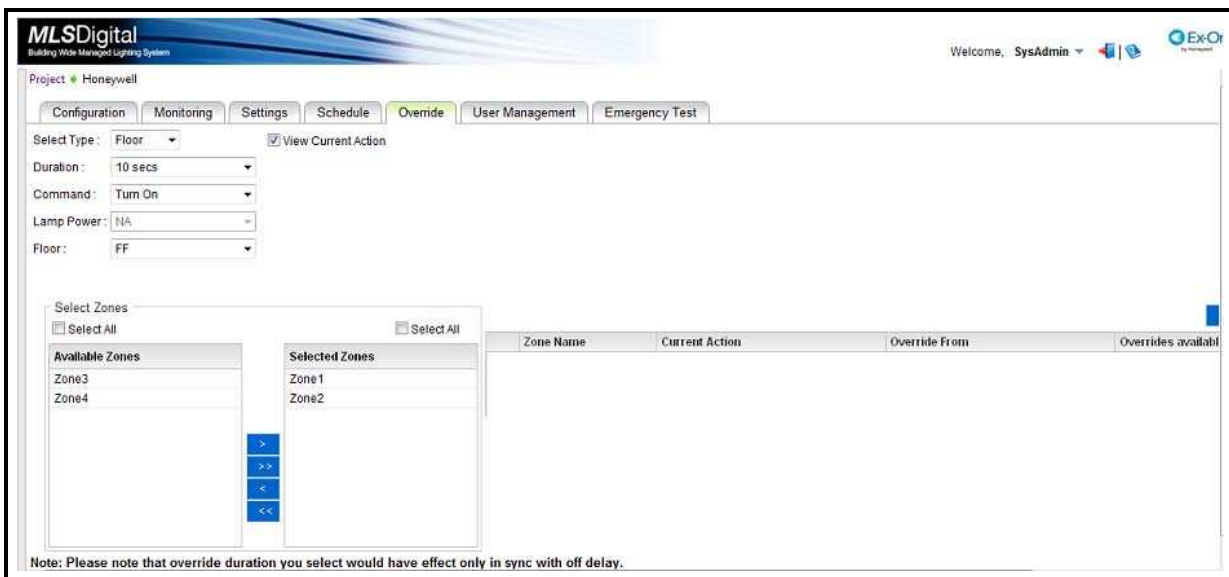
Overriding or commanding zones

The MLS front end application overrides the existing lighting statuses and changes them remotely. The application supports two methods.

- You can select one or more zones under **Select Zones** and send the appropriate commands.

For example, Turn OFF lights, Turn ON lights, set a % light level, recall specific scene, and so on.

Figure 34 Overriding or Commanding the Zones



View and clear Current overrides

To view all the zone overrides either from an MLS override/schedule or BMS override, select the **View Current Override** checkbox in the **Override** tab. This displays a table in the right side of the screen, which contains the zones that have any active overrides and their respective sources. If a particular zone is overridden by more than one source, the table lists the active override and its respective source along with the other sources of overrides.

To clear any of the overrides, select the zones and click the **Clear Overrides** button at the top of the table. In the ensuing dialog box, select the override sources which need to be cleared and click **OK**.

- While monitoring the zone occupancy, right-click the zone and select the required commands.

Automated Emergency Lighting Test

4

MLSUCA/B supports automated testing of self contained and DALI based Emergency luminaires. By connecting the Emergency luminaires to individual channels of the LCM, you can create automated test schedules for those luminaires. The channels of the LCM are individually addressable and hence any failures in the Emergency luminaires can be reported back to the MLS front end application.

Features

- Use the application to schedule and perform Functional Tests and Duration Tests for the emergency ballasts that are connected to individual channels of the LCM.
 - **Function Test** - Verifies that the emergency devices are communicating with the system properly; checks for lamp failures and verifies that the battery circuit is functional.
 - **Duration Test** - Verifies that the batteries attached to the emergency devices operate within their rated limits.
- Group emergency ballasts up to 30 groups for ease of management.
- Schedule Functional Tests to occur weekly, monthly, or yearly. In addition, Functional Tests can be manually overridden at any time.
- Schedule Duration Tests to occur weekly, monthly, or yearly. In addition, Duration Tests can be manually overridden at any time.
- Alarms for displaying the status, events, and reporting failures.
- Generate reports in the format defined by BS 5266-1:2005 Appendix D and notified through e-mail.

Authentication

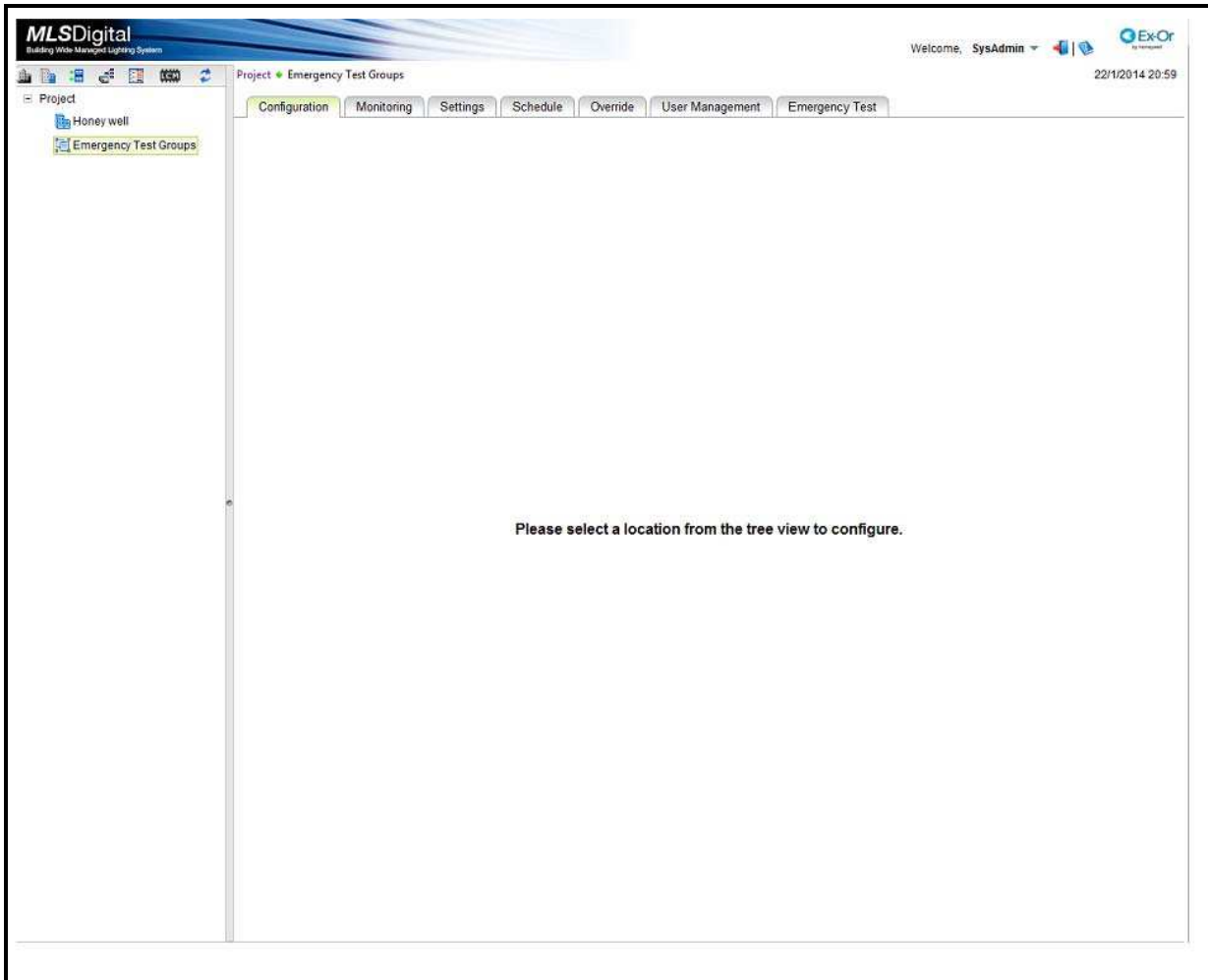
User level authentication of Facility Manager or higher is required to manage automated test for Emergency luminaires.

Configuring MLSUCA/B for automated test


In order to perform automated tests, logical grouping of emergency devices can be created and the system can be pre-configured with automated test schedules and settings. The pre-configuration can be done off site by connecting to the MLSUCA/B. The pre-configuration can later be verified with the on site configuration when the MLSUCA/B is connected to the MLS network.

On logging on, the project explorer for the Emergency Test Group appears on the left pane of the MLS main page

Figure 35 Automated Emergency Lighting Test System



Adding LCMs

- 1 Click the **Add LCM** icon  on the left pane.
or
Right click the RB2000/Floor name and click **Add LCM**.
The configuration screen appears on the right pane.
- 2 Enter the LCM properties in the **Properties** box on the right side.
- 3 Select the channels with Emergency Ballasts
- 4 Click **Save**.



Note

On completing LCM addition, two types of icons are displayed in the **Configuration** and **Monitoring** tabs. One is the icon for LCMs and the other for the channels that are selected under that LCM. In the **Configuration** tab, the icons can be moved and placed in the location specified in the actual floor plan.

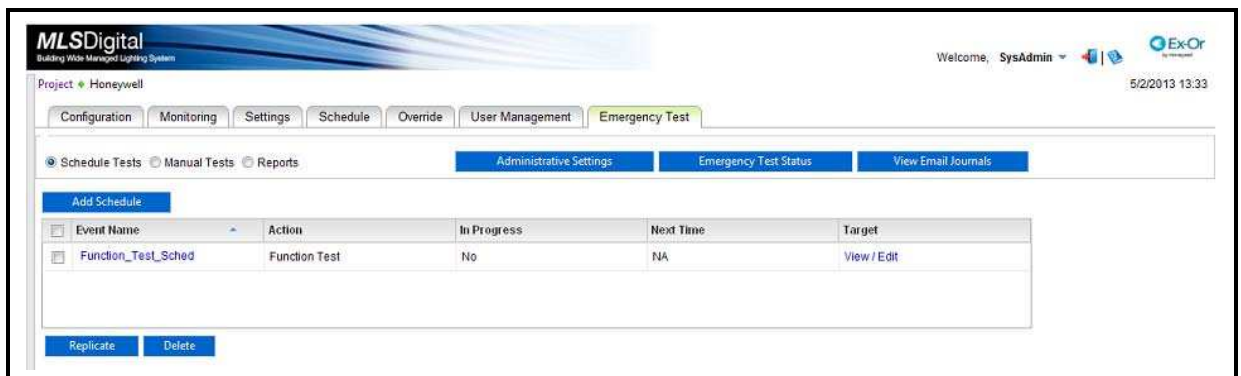
Grouping

The application provides the following options for creating groups

- Based on even or odd addresses of LCMs.
- Based on even or odd channel numbers of LCMs.
- Based on type of Emergency Ballasts.
- User defined assignment of groups

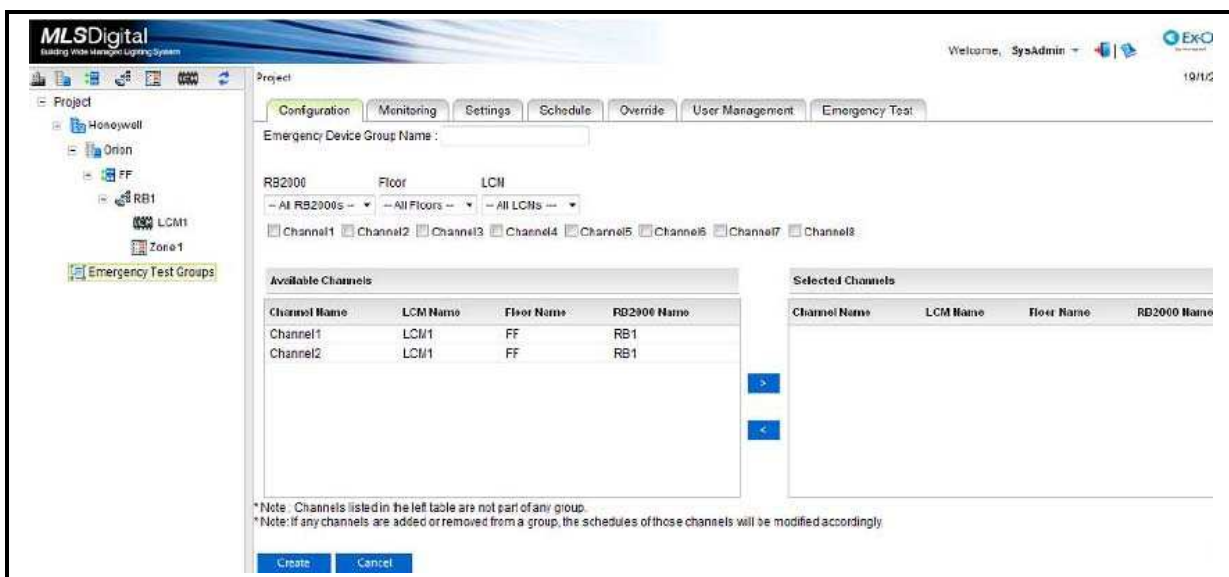
In the project explorer, right-click the **Emergency Test Group** and select **Add Group**. The **Configuration** screen of the **Emergency Test Group** appears on the right pane.

Figure 36 Adding an Emergency Test group



- 1 Type a user friendly name in the **Emergency Device Group Name** box.
- 2 Select the channels listed under **Available Channels** in the left table or filter the channels in the boxes available.
- 3 Move the **Selected Channels** to the right table through the right arrow button.
- 4 Click **Create**. The Emergency Test Group will appear in the project explorer.
- 5 The channels that are ungrouped can be seen under **View ungrouped channels** by right clicking on the **Emergency Test Groups**.

Figure 37 Configuration



After the **Emergency Test Group** is created, to edit the configuration parameters click on the **Group name** and click **Update**.



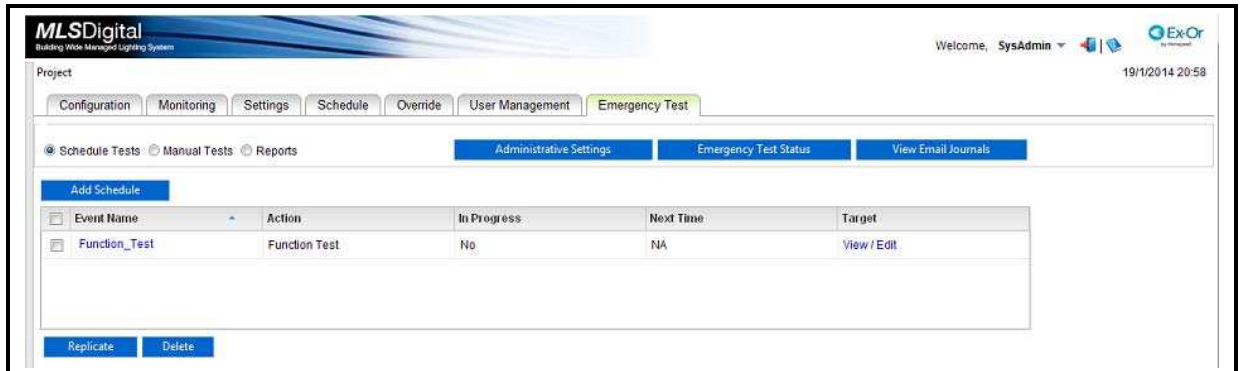
Note

A channel cannot be part of two groups simultaneously. If a channel that belongs to a group is added under the selected channels of another group, it now becomes a part of the latest group.

Schedule tests

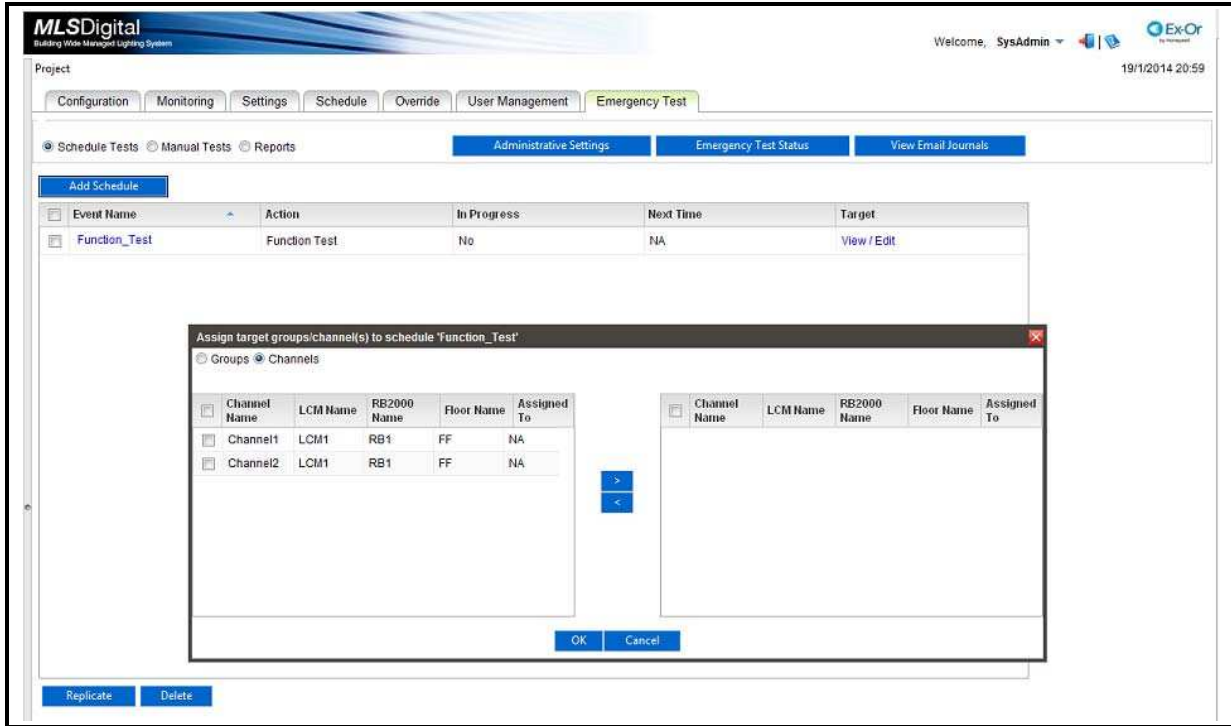
To add a new schedule:

Figure 38 Adding schedules



- 1 Go to **Emergency Test** tab.
- 2 Click the **Add Schedule** button.
- 3 For an Emergency Test schedule, specify the **Automated Test Type** (Function or Duration) along with the time.
- 4 After creating an Emergency Test schedule, you can assign it to a Group/ Ungrouped channels by clicking the **View/Edit** option under **Target**.
- 5 The channels that are unscheduled can be seen under **View unscheduled channels** by right clicking on the Emergency Test groups in the **Configuration** tab.

Figure 39 Grouping schedules



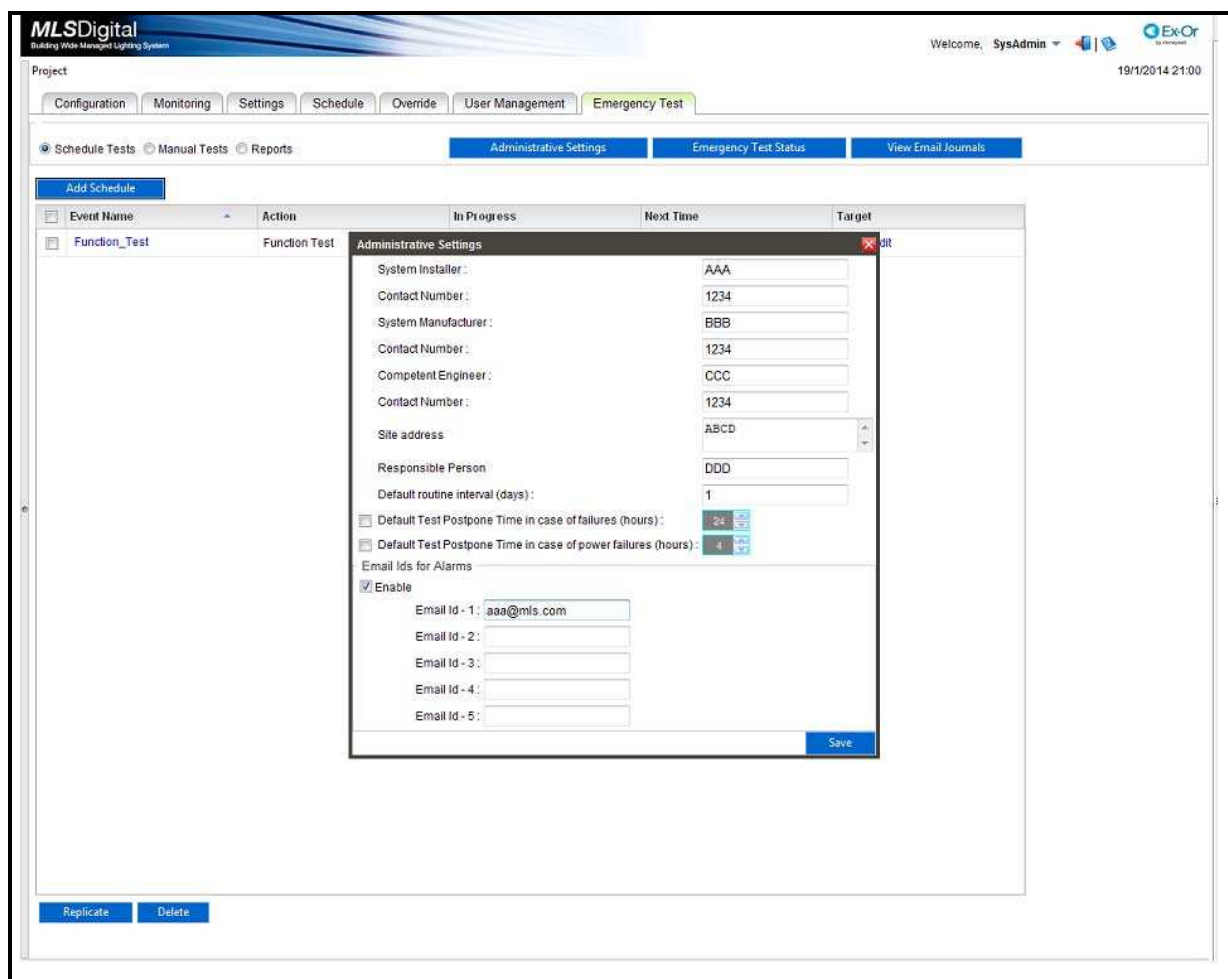
Warning

The battery of the emergency device will be completely drained at the end of the duration test. Hence it is not recommended to initiate the duration test simultaneously on emergency devices adjacent to each other.

Administrative settings

The Administrative settings page under the **Emergency** tab is used to enter user details in charge of the site. The authorized user can configure up to 5 e-mail IDs for receiving notifications in this page. The default test postpone time on test failures and power failures is entered in this page.

Figure 40 Emergency Test settings



Validate LCM Configuration

Validate LCM configuration verifies the properties of an LCM and its channels with the physical LCM configuration. To execute it, go to the configuration page and right-click on the Floor, or RB2000, or LCM in the project explorer on the left. On executing this command, the firmware version will be displayed in the LCM properties. Also, in case of a mismatch with the physical LCM configuration, a warning symbol will be displayed in LCM properties.



Note

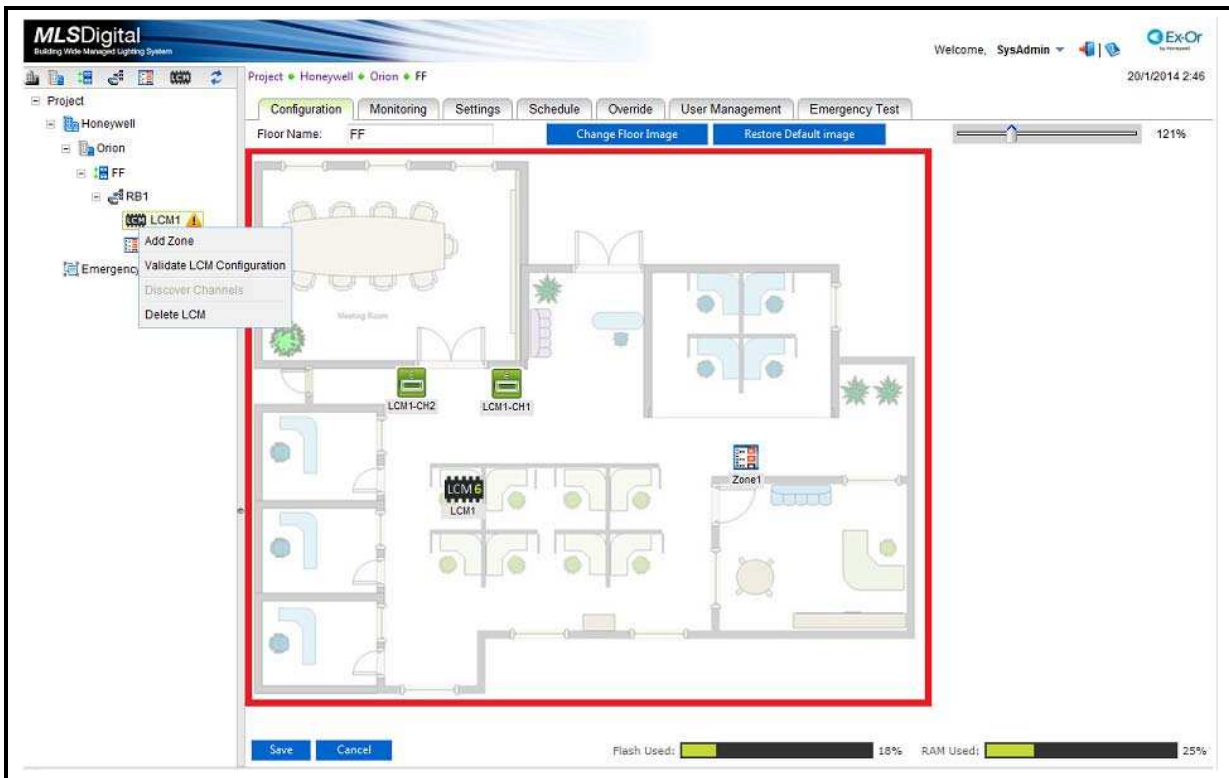
Validation will work only if the LCM is associated with a floor and RB2000 combination.



Warning

Do NOT connect more than one Emergency ballast on an individual channel of an LCM.

Figure 41 Monitoring



Signoff Installation

You can sign-off a new installation by selecting “set site online” at the site level in the application, thereby indicating the logical completion of installation & commissioning. In order to provide accurate battery status, it is expected that all the emergency devices have undergone at least one round of rated duration test. Once you initiate a formal installation signoff, the application scans through LCM channels and prepares a list of channels that have not undergone any rated duration test.

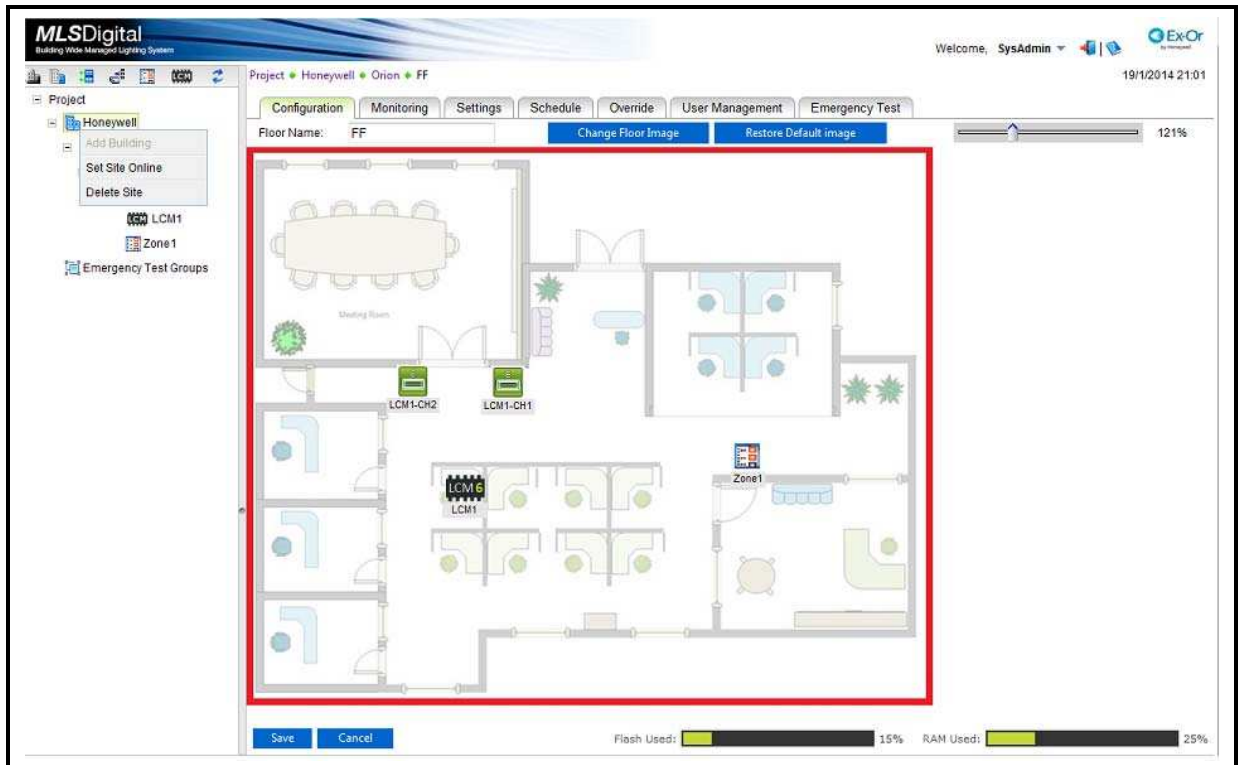
The application continues to send periodic reminder mails until all the Emergency Luminaires are tested for the rated duration at least once.



Note

Before signing off installation, ensure that the e-mail ID and other settings are entered correctly under **Emergency Test Settings** in the **Settings** tab.

Figure 42 Signoff Installation



Monitoring and control

Alarms

All faults in Automated Testing such as scheduled test failure, installation or commissioning errors, communication failures, etc., are listed when you click the Alarms field on the Status Bar. The alarm has to be acknowledged twice by the user, once on seeing the alarm, and the second time after taking corrective action, for the system to automatically update the status of the alarm or removing it from the list.

The default routine interval (in days) for the alarms can be set in the Emergency Test Settings page. The following is a list of events for which alarms are sent by the application based on the periodic poll performed at routine interval you set::

1. Removal or addition of Emergency devices connected to the channels of LCM.
2. Communication failures in RB2000 and LCM(s).
3. Power failures in emergency devices.
4. Emergency or non-emergency Luminaire failures on any channels of LCM(s).
5. Missing or addition of any emergency luminaires on any channel of LCM(s).
6. Identification of emergency luminaires not covered under any scheduled test groups.

Figure 43 Alarms

Action	Name	LCM Name	RB Name	Time	Fault	Fault Status	Comments1	Comments2
Acknowledge	Channel2	LCM1	RB1	2014-Jan-19 21:2 GMT	Device not available	Unacked	NA	NA

Monitoring

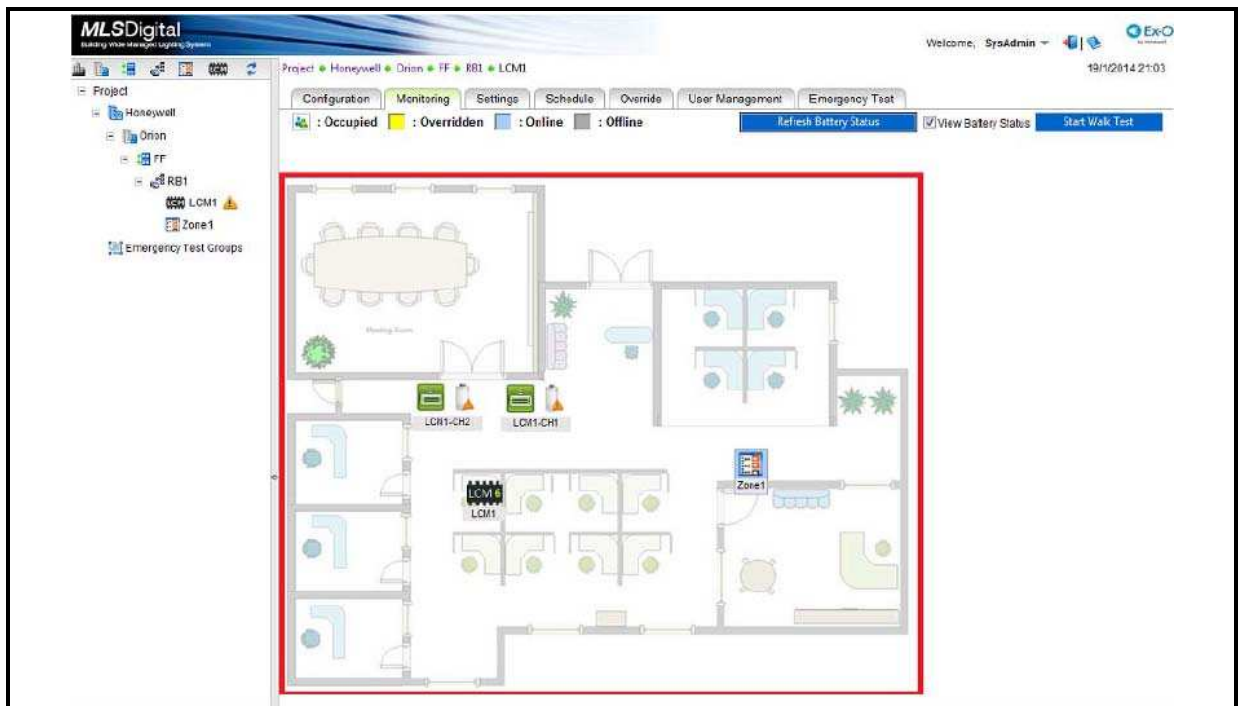
In the **Monitoring** tab, the status of the battery associated with a channel can be viewed by checking out **Update battery status** box on the top right side of the screen. If the duration test is completed, holding the cursor on the battery will display the actual battery charge level of the emergency device if it supports query battery charge DALI command. If the duration test is not performed, holding the cursor on the battery will display the message, “Duration Test not performed”. When the duration test is in progress or during a normal Emergency operation, holding the cursor on the battery will show the percentage of remaining charge. Click the channel icon to display the properties of that channel.



Note

For the battery status to be displayed, the duration test should have been completed at least once.

Figure 44 Monitoring

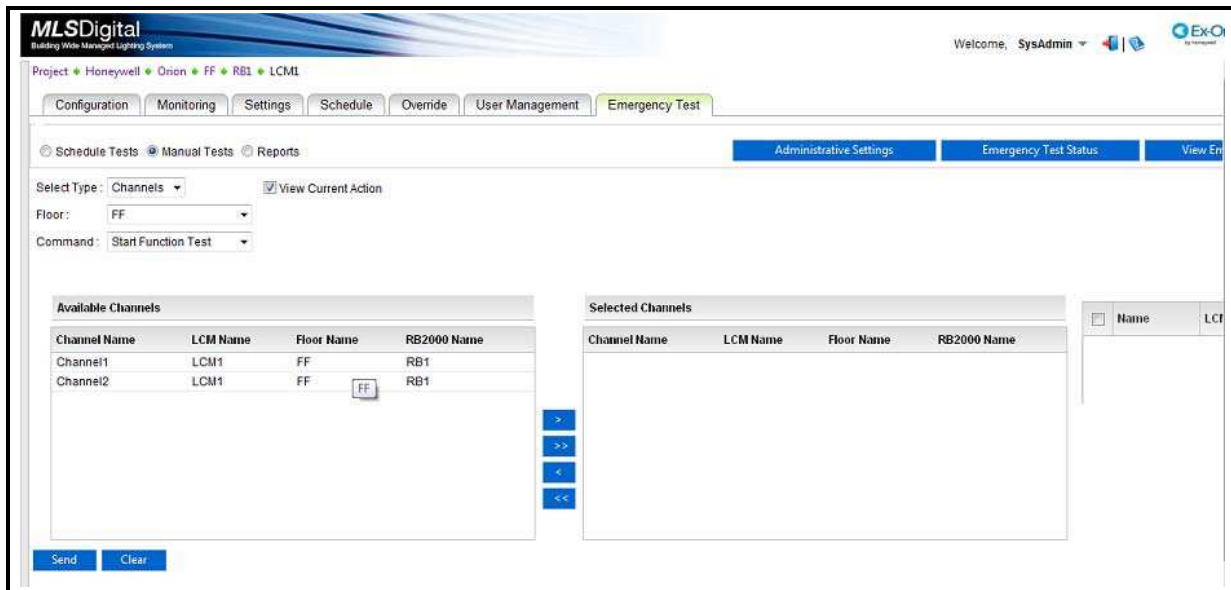


Manual tests

This tab enables you to override the Emergency Test Schedules at a Floor, Building, RB2000, Channel, or Group level.

The **Manual Tests** button on the **Emergency Test** page can be used to manually override the automated tests scheduled at a channel or group level. The application supports three commands – Start Function Test, Start Duration Test, and Stop Test

Figure 45 Manual Tests



Emergency test status

The **Emergency Test Status** page under the **Emergency** tab lists down the test results of Automated tests as well as systemic faults for at least 2 weeks before overwriting them with more recent information. As soon as the report is created it's instantly e-mailed according to set up created.

Figure 46

The screenshot shows the MLSDigital web interface for Emergency Test Status. The main window has a navigation bar with tabs for Configuration, Monitoring, Settings, Schedule, Override, User Management, and Emergency Test. Under the Emergency Test tab, there are sub-tabs for Schedule Tests, Manual Tests, and Reports. The Emergency Test Status sub-tab is active. The interface includes a 'Select Type' dropdown set to 'Channels', a 'View Current Action' checkbox, a 'Floor' dropdown set to 'FF', and a 'Command' dropdown set to 'Start Function Test'. Below these are sections for 'Available Channels' and 'Selected Channels'. A modal window titled 'Channel N Test Status' is open, displaying a table of test results. The table has columns for Time, Channel Name, LCM Name, Floor Name, RB2000 Name, Group Name, and Test Result. The data shows two entries for 'Channel1' on 'FF' floor, both using 'LCM1' and 'RB1' devices, with the first entry at 9:04 PM GMT and the second at 9:05 PM GMT. The second entry's result is 'Function test completed. Result - Test passed.' The modal window also shows pagination information: Page 1 of 1, Page size 20, Showing 1-2 of 2. There are 'Send' and 'Clear' buttons at the bottom left of the main interface and an 'OK' button at the bottom of the modal window.

Time	Channel Name	LCM Name	Floor Name	RB2000 Name	Group Name	Test Result
19-Jan-14 9:04 PM GMT	Channel1	LCM1	FF	RB1	UnAssigned	Function test started.
19-Jan-14 9:05 PM GMT	Channel1	LCM1	FF	RB1	UnAssigned	Function test completed. Result - Test passed.

View e-mail journals

The **View Email Journals** button lists down the journal of e-mail up to 6 months with the following information

1. Time stamp of the email sent including date
2. Indication of fault if any

Figure 47 View e-mail journals

The screenshot shows the MLSDigital web interface. At the top, there is a header with the MLSDigital logo and navigation tabs: Configuration, Monitoring, Settings, Schedule, Override, User Management, and Emergency Test. Below the tabs, there are buttons for Administrative Settings, Emergency Test Status, and View Email Journals. The main content area has a 'Test Report' section with filters for Type, Status, Floor, RB2000s, and Group, along with a Refresh button. Below this is a table with columns for Time and Channel Name. An 'Email Logs' pop-up window is open, showing a table with columns for Time and Log Message. The log messages indicate email sending failures due to disabled email service and an unconfigured email address. To the right of the pop-up, there is a 'Test Results' section showing 'Function test started' and 'Function test completed. Result - Test passed.' At the bottom left, there are 'Print' and 'Email' buttons.

Time	Channel Name
19-Jan-14 9:04 PM GMT	Channel1
19-Jan-14 9:05 PM GMT	Channel1

Time	Log Message
19-Jan-14 9:06 PM GMT	Email sending failed. Email service is disabled.
19-Jan-14 9:06 PM GMT	Email sending failed. Email address to send is not configured.

Reports

You can access reports of function & duration tests performed as per the format defined by BS 5266-1:2005 Appendix D. The test reports can be logically grouped and printed or e-mailed as required.

Figure 48 Reports

The screenshot displays the 'Emergency Test' section of the MLSDigital interface. It includes a navigation bar with 'Emergency Test' highlighted. Below this are three buttons: 'Administrative Settings', 'Emergency Test Status', and 'View Email Journals'. A 'Test Report' section features several dropdown menus for filtering: 'Type' (set to '-- All --'), 'Status' (set to '-- All --'), 'Floor' (set to '-- All --'), 'RB2000s' (set to '-- All --'), and 'Group' (set to '-- All --'). A 'Refresh' button is located to the right of these filters. Below the filters is a table with the following data:

Time	Channel Name	LCM Name	Floor Name	RB2000 Name	Group Name	Test Results
19-Jan-14 9:04 PM GMT	Channel1	LCM1	FF	RB1	UnAssigned	Function test started.
19-Jan-14 9:05 PM GMT	Channel1	LCM1	FF	RB1	UnAssigned	Function test completed. Result - Test passed.

At the bottom of the table area, there are 'Print' and 'Email' buttons. The interface also shows a page indicator 'Page 1 of 1' and 'Page size 20'.

4 – AUTOMATED EMERGENCY LIGHTING TEST

1. What is the hierarchy of the project that I can create for lighting control?
A typical hierarchy that you can create is Site > Building > Floor > RB2000 > LCM. If a single RB2000 is used for multiple floors, the hierarchy would be Site > Building > RB2000 > Floor > LCM.
2. I am using Windows 7 or higher which doesn't have Hyperterminal. What do I do for configuring IP settings?
You can use the open source software Putty, which can be downloaded from <http://www.putty.org>.
3. I am unable to see the status bar when I login to the application?
The application is best viewed at the resolution 1280 X 820 in Internet Explorer 9 or above. For lower versions, the status bar can be seen with the help of the **Status Bar**.
4. Where can I see the memory usage of the system?
The memory usage of the system is displayed in the **Configuration** page at the bottom of the screen.
5. What are the BACnet objects supported by MLSUCA/B?
The BACnet objects supported are Real Time Occupancy point, Timed Occupancy point, and Command point. See the section, "*Details of MLS BACnet objects*" for a description of each point.
6. How do I know which IP device is to be selected for BACnet IP port?
If the device is under the same IP subnet as other devices on BACnet, select the IP device type as "Standard". If the device has to communicate under a different subnet, select the IP device type as BBMD.
7. What does BBMD stand for?
BBMD stands for BACnet/IP Broadcast Management Device.
8. What is the difference between Discover LCMs and Validate LCM configuration?
Discover LCM(s) checks all the LCMs that are connected on the MLS bus and lists them in View Discovered LCM(s). Validate LCM compares the pre-

configured channels with the physically connected channels and displays only the mismatch.

9. Where can I see the failures reported after performing Validate LCM configuration?

The failures from Validate LCM configuration are notified through Alarms.

10. Where do I set the routine intervals for Alarms notification?

The routine intervals for Alarms notification can be set under Emergency Test > Emergency Test Settings > Default routine interval (days).

11. Can I perform duration test on a battery that is not fully charged?

Yes, you can perform duration test as long as the battery charge is above a certain threshold to accept the duration test.

12. How do I know whether the battery is charged enough to perform the duration test?

When you initiate the duration test on a battery, the battery will respond to the application that the charge is not sufficient to perform the duration test.

13. How do I make sure if all the devices on the MLS bus are connected properly?

Press the Bus Test switch on the RB2000 and check the devices on the MLS bus for operation.

14. Which are the Emergency Ballasts and Emergency Luminaires that have been tested with the product?

The product has been tested with the below Emergency Ballasts and Emergency Luminaires:

- Tridonic Emergency Ballasts:
 - EM 16 PRO EZ-3
 - EM 35 PRO EZ-3
 - EMpowerLED 1W EZ-3
 - EMpowerLED 2W EZ-3
- Mackwell Emergency Ballasts:
 - XY6/LS1/D1
 - XY6/PL1/D1.
- Honeywell Luminaires:
 - HL66CDEM36W4000KD.

15. How do I know whether to use MLSUCA or MLSUCB for my application?

Based on the number of channels to be supported for a given number of RB2000s and zones with or without BACnet, the Technical Sales Engineer will recommend whether MLSUCA or MLSUCB can be used for the application.

16. Niagara 3.4.43 version is running on my MLSUCA. Can I install the latest application with Emergency testing feature on this?

Yes, you can install the latest application with Emergency testing feature on the Niagara 3.4.43 version. If you want to upgrade the MLSUCA/B to Niagara version 3.6.47, it should be sent back to the factory.

Troubleshooting

6

You can easily resolve the general problems described in this section. However, if a problem persists that you are unable to resolve yourself, contact technical support.

Problem	Possible causes	Solution
Every time I do a discovery, the list of discovered RB2000s is different.	Probably, there could be a RB2000 with address 00.	Change the address of the RB2000 to a value other than 00.
The discovered RB2000s are more than the existing RB2000s.	Probably, there could be a RB2000 with address 00 in the field.	Change the address of the RB2000 to a value other than 00.
RB2000s with address set above 100 are not being discovered by the application.	The application is limited to discover RB2000s with address ≤ 100 .	Change the address of the RB2000 to a non-zero value and ≤ 100 .
LCM is not getting discovered.	It may not have been connected to MLS bus.	Connect the MLS bus to the connector on the LCM and rediscover. Check the MLS LED on the LCM to be ON.
LCM is not being discovered.	The LCM settings might not be as per requirement.	Refer the LCM user guide and program the settings using the LCM utility.
LCM validation is failing even though the LCM is online.	Some of the channels may not have been connected to LCM properly.	Check the Ballast control LED on the LCM and check whether it blinks the number of times equal to the number of channels connected to the LCM whenever a validation is done.
Resolved alarm is still displayed in the Alarms panel.	The fault is not corrected in the device listed in the alarm. The application has to confirm the fault correction by running the suitable test.	Check if the fault on the device is corrected or wait for the application to run the appropriate test, or manually initiate the test.

Problem	Possible causes	Solution
Alarms for new devices are generated with past time stamp.	These devices could have been deleted from the application without the alarm being resolved.	Check the device fault and resolve the alarm.
The application is unable to toggle the ballasts connected on LCM channels.	The ballasts might be incompatible.	This is not an issue and there is no possible solution.
I am unable to load the MLS Digital Application in the web browser.	The LAN cable might be faulty or loose.	Check the proper connection of LAN cable to the MLSUCA/B LAN1 port and ping the IP address of the MLSUCA/B using command prompt from the computer to ensure that communication is established. Then retry again.
Browser prompts a warning as 'Stop running scripts'.	The application is trying to retrieve a large data from the MLSUCA/B.	Select 'No' in the user prompt and wait for the application to load the data.
LCM is able to initiate manual tests on Emergency ballasts but the application is not able to initiate the same tests.	The LCM to Emergency ballast connection over the DALI bus is not proper.	Check for proper connection of DALI bus from LCM to the Emergency ballast.
I am facing problems in uploading the images for floor or building even though the memory utilization is within the limits.	Temp files could have been created during image uploads, which are being added to the total memory usage.	Take a backup of the configuration from the settings tab and reboot the MLSUCA/B once.

System Capacity and Memory Allocations

7

The MLSUCA/B can support the following installation sizes of Emergency fittings that includes luminaries & Exit signs:

1. MLSUCA: Up to 1040 Emergency fittings
2. MLSUCB: Up to 1920 Emergency fittings

The above numbers hold good when considering a minimum number of RB2000s without MLS zones and no BACnet access.

With additional RB2000, MLS zones, & BACnet access for MLS zones, the supported number of Emergency fittings will come down appropriately.

7 – SYSTEM CAPACITY AND MEMORY ALLOCATIONS

System Latency and Timing Information

8

Time occupancy status timing information

Continuous polling is happening in the background.

Polling cycle period = Number of RB2000s configured * 300 ms

Each configured device will be polled at least once within the polling period.

However, if any offline device is included in the polling cycle, there will be a 500 ms wait for response to each polling attempt to these devices and there will be 3 retries before the poll moves on to the next device. This can add some 1500 ms per offline device to the expected polling cycle period.

Zone override timing information

When any command is written to the points, and if the value is written with high priority, then that value is written to the write queue and the point is polled each time in its normal turn within the overall polling cycle for a period of (offdelay - 5 s). After this period has elapsed, the command is deemed to be expired/cleared.

When a number of points are commanded at the same time, some delay can be expected before all the points react to the commands.

Off delay is an MLS system parameter defining the time for which lights will be left on after a final detection of movement in a conventional zone, typically 20 minutes.

BACnet update timing information

Occupancy information: Occupancy data is updated immediately to BACnet points once it is read from the RB2000.

Commanding information: When a command is written to a point, in the next BACnet poll, the value is transmitted to the native MLS point. If the value is written with high priority, then that value will be transmitted as per the zone override timing information given above.

Walk test timing information

When walk test is enabled from the **Monitoring** page, it is an application level walk test.

It differentiates between occupancy driven by the off delay and occupancy driven by immediate movement.

Zones that sense movement are displayed in green for the first 10 s. After the first 10 s, the representation is driven by the off delay. In that case, it will be displayed in yellow until the next movement is sensed or the off delay expires.

Monitor timing information

In the monitoring mode, the on-screen display is refreshed every 10 s, when the data collected in the background during the previous 10 s will be used to update the screen.

For occupancy information to be updated in the monitoring page, in the worst case, poll cycle period + 10 s is taken, where poll cycle period is as described and qualified above.



Note

The status of the emergency devices is updated every 10 minutes. If **Update Battery Status** is enabled, the battery status is also updated every 10 minutes.

Glossary

9

Term	Description
MLS	Managed Lighting System is an Ex-Or proprietary communications system for managing the automatic control of lighting, either through occupancy detection or other automatic process.
BACnet	Building Automation and Control network. An industry standard protocol developed since 1987 primarily for building management and automation including the control of HVAC, lighting, and access control (to name just a few of the applications/disciplines integrated).
HVAC	Heating Ventilation Air Conditioning
IP	Internet Protocol uses packet switching to transfer data in small chunks over local and wide area networks and the internet. It uses an addressing system to control where data is sent, hence IP address, normally given as a textual string in browsers, but resolved into a 32 bit number (IPv4) or 48 bit number in the newer (IPv6) standard, which widens the addressing range to accommodate the spreading use of IP based products.
URI	Uniform Resource Identifier is a method for identifying a resource by name (URN) or by location (URL).
URL	Uniform Resource Locator is a textual address, mapping to an absolute address. It usually consists of several parts to define network location via the various access mechanisms. The first part in the scheme is either http or ftp. Next an IP address or domain name which is resolvable to an IP address, then an optional port number and an optional path which is used to point to a file resource at the designated location, then an optional query string which is data the target may use, and finally an anchor part which may point to a particular location on a page.

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