DALI PRO 2 IoT

"Emergency Lighting"

firmware version 3.1.11.x or higher

Quick Start Guide

Please read this guide in full before using our Emergency Lighting service.

Only qualified personnel can install and maintain this equipment. It is the system owner's responsibility to ensure that all applicable international and local electrical standards, safe practices and regulations are followed.

The automated tests performed by the controller cannot fully replace the physical inspection of the emergency lighting installation. Other checks to be performed on an annual basis include checking batteries and lenses for corrosion or other damage, cleaning the unit and lens if needed, removing any obstacles blocking the escape routes etc.

Table of Contents

1. Introduction

In order to ensure the occupant safety, emergency lights are mandatory in most commercial buildings. There is furthermore a legal requirement for periodic testing of emergency lighting. This is generally a time consuming and costly procedure, which needs to be performed by qualified personnel.

There are two types of tests that should be implemented: a function and a duration test. The function test is a quick test (takes around 20 seconds) of the battery, charging circuit, driver/ ballast and lamp, while the duration test checks if the battery is able to operate the lamp for the full rated duration (1 or 3 hours). The function test typically needs to be performed once a month, while the duration test once a year.

DALI enables emergency tests for self-contained luminaires to be automated. The tests for DALI certified products have been developed by the DALI Alliance, based on Part 202 of IEC 62386. Control gear in Part 202 are also known as device type 1 (DT1). For more information, visit: https://www.dali-alliance.org/dali/emergency.html

The Emergency Lighting (EL) feature of the DALI PRO 2 IoT controller allows you to automatically test your DT1 emergency luminaires, it issues and emails an EL report at a user specified time interval and sends out alarm notifications in case of a detected failure.

The EL feature is available from firmware version 3.1.11.x or higher. The feature is preactivated and free for use for up to 5 EL luminaires per controller. If more EL luminaires are connected to a controller, these will not be visualized in the web UI EL page or in the issued report.

In order to receive reports for more EL luminaires, you need to unlock the full EL feature by means of a feature key to be purchased. Please contact your OEM or Inventronics sales representative and ask for it. Activating this service can be done via the built-in, browser based Commissioning App (Web UI) or the PC-Tool.

2. Extending the Emergency Lighting functionality

2.1 Via the Web UI

To extend the emergency lighting reporting feature to more than 5 luminaires, you will need a code or "key" [= string of characters]. An example of a key: 2v4u/IAid5chIoL4FW667u8y+GaajrAj6OphyAi0M/D4OFJbIUDMs82QrMZNg

You can order a key by sending an e-mail to: support@inventronicsglobal.com. Please provide your Inventronics Customer Number and the serial number(s) of the controller(s). Also, clearly state that you request a key for "emergency lighting".

Once you have received the key, you must input this key into the controller locally.

Use a web-browser and type the IP address of your controller. Log on to the controller and follow Menu> System Settings> Advanced

Then scroll down to Feature Keys:

Feature Keys ⓘ

QWERTYUIOPasdfghjkl9876543221==

Apply Key

Feature	Enabled
Emergency Lighting	No
Cloud API	Yes
Remote Access	Yes

Copy the key to the input field and click on the "Apply Key" to enable the "Feature". A pop-up screen [upper-right corner] will appear with the information: "Feature Key applied successfully".

The page will be automatically refreshed and the new feature status will be visible.
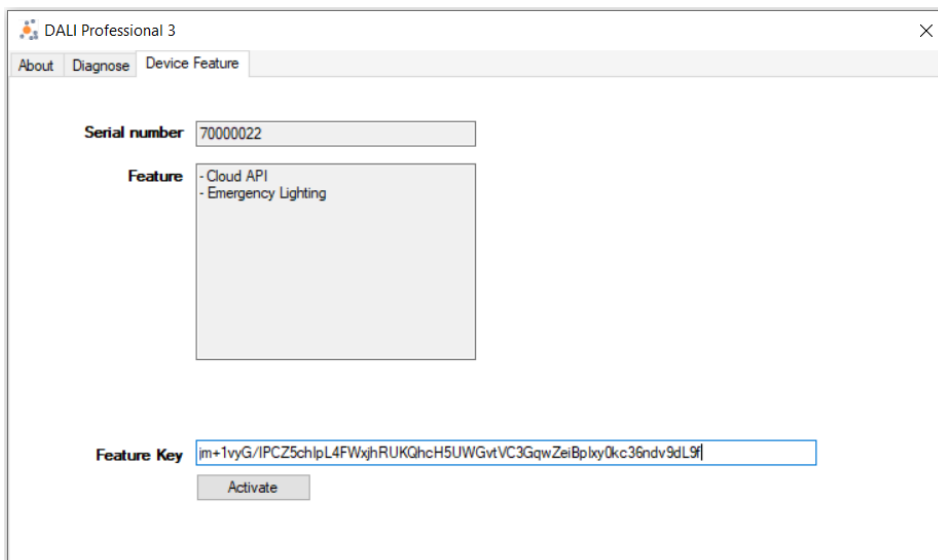
Feature Keys ⓘ

QWERTYUIOPasdfghjkl9876543221==

Apply Key

Feature	Enabled
Emergency Lighting	Yes
Cloud API	Yes
Remote Access	Yes

2.2 Via the PC tool

The feature key can be applied to the device after connection to the PC-Tool and over the "About" dialog box

3. Commissioning

3.1 Via the Web UI

The emergency lighting devices are recognized after the device search and a new lighting group appears automatically in each room (zone), only for the emergency lighting devices.

This group has no functions and is dedicated to emergency lighting control gear (CG) without normal light functionality (type C and D). Only emergency lighting devices can be mapped to this special group.
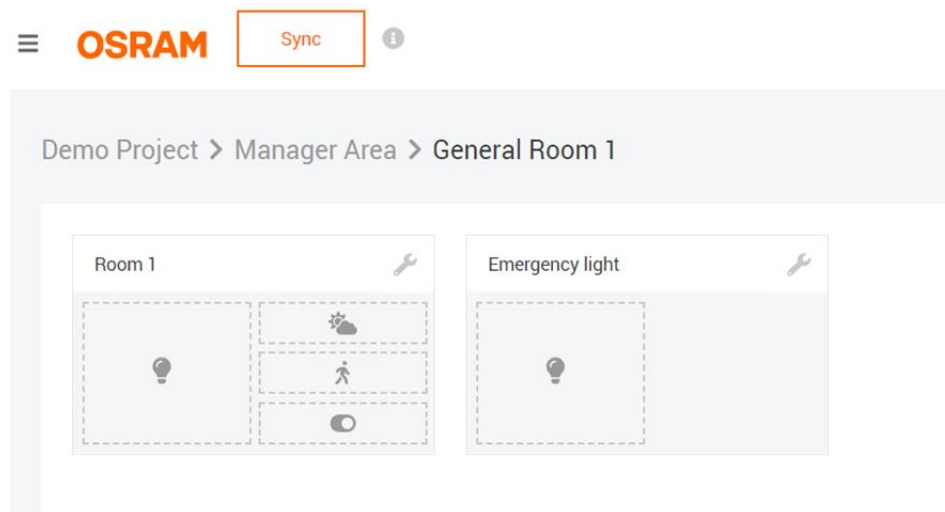
3.2 Via the PC tool

After the device search, a report dialog gives an overview of the ballasts with emergency light functionality:

Amount	DALI Version	GTIN	Firmware Version	Product name	DALI data	Emergency Light	Comment
1	1	5060203771768	2.03	Unknown Device		X	
1	1	4062172079778	1.32	Unknown Device		X	
4	1	4008321371560	1.09	OTi DALI 75/220...240/24 1...4 CH			

In the ballast properties, the special properties of the emergency light device type 1 (DT1) are shown:

Property
Gear

Device: EVG A04 Maxim

1. Data
Title	EVG A04 Maxim
Activated	Yes
Comment	

2. Device
GTIN	5060203771768
Product name	
Serial number	2932354521
Firmware version	2.03
DALI version	1
Device type	1
Physical min level	100 %
Random address	32-188-204
Port	A
Short address	4

3. Emergency Light
Type	Type D
Rated Duration	3:00:00
Prolong Time	0 min

4. Usage
Use in group	Gruppe 2
Use in zones	Corridor Level 2

5. Cloud Data
DALI data	No

The property "Rated Duration" will be read out of the device and is the time in which the lamp can be operated in an emergency. It is also the typical time for the duration test.

With the property "Prolong Time" the emergency operation can be extended, after the mains power has been restored.

There are four types of emergency light: type A-D:

Type	Description (from DALI standard proposal)	Normal light function
A	Maintained, dimming controllable self-contained emergency control gear with PHM < 254 (100 %)	Yes
B	maintained, on/off controllable self-contained emergency control gear with PHM equal to 254 (100 %)	Yes
C	maintained, non-controllable self-contained emergency control gear which operates the lamp(s) in all modes, but does not support level instructions nor corresponding configuration commands	No
D	non-maintained, non-controllable self-contained emergency control gear which does not operate the lamp(s) in normal or inhibit modes, and does not support level instructions nor corresponding configuration commands	No

The type definitions are from the proposal of the DALI 2/ part 202 emergency DALI standard. If the light is not controllable, the power on and system failure level parameters are not visible.

Ballasts with normal light functionality (Types A & B) can be used similarly to a normal ballast. To provide ballasts without normal light functionality (Types C & D) also zone affiliation, a special dummy emergency input can be used.

inventronics

Please note that the zone assignment is important for the automatic test rules, as the test algorithm prevents more than one EL luminaire to be tested at the same time in the same zone!

4. Configuring the EL test reports

4.1 Via the Web UI

Use a web-browser and type the IP address of your controller. Log on to the controller and follow Menu> Emergency Lighting

In the General section you can disable the automatic function (enabled by default) and/ or duration tests by ticking the respective box and saving the configuration.

In this section you see also the overview of the emergency lighting installation, including following information:

- Total number of EL devices

- Device status overview. The possible values are: OK, with faults, missing, blocked (because of locked feature), with tests out of date, devices under test.

4.1.1 EL report

The user is able to generate a EL report, by pressing the relevant button.
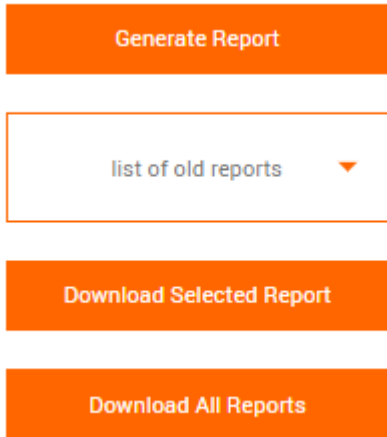
Furthermore, the user can download old reports, either by clicking on the drop-down list and selecting an individual report to download, or by clicking on the "Download All Reports" button. The old reports are named after the issued date and either an [OK] or a [!], the former indicating that there were no errors or other issues with the EL installation detected at that point and the latter suggesting that faults were detected.
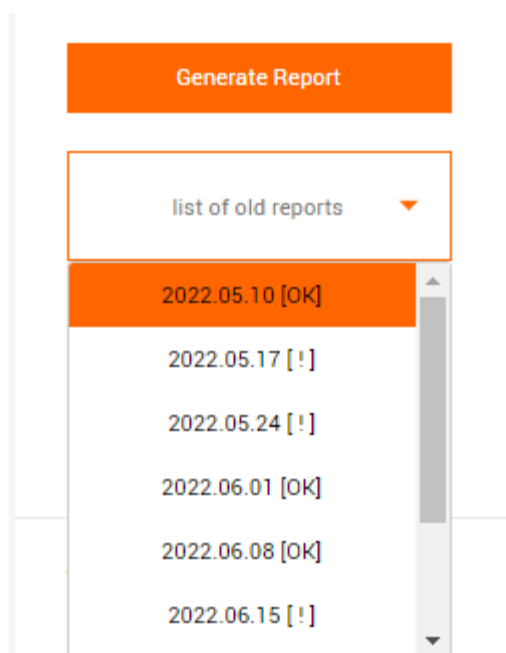
The EL report contains following information:

DALI PRO 2 IoT - Emergency Lighting Report

Control unit: DALIPRO2-77540000 Date: 2022-06-01 11:15:56 AM
Serial number: 77540000 Devices: 9

Title/Area/Zone	State	Battery	Function Test	Duration Test	Info	
Ballast 3_1 Manager Area/Conference Room 1	● Normal	<100 %	● Completed 2022.06.01 09:00:06	● Completed 2022.05.20 15:34:10	180 min	None
Stairs 1_1 Manager Area/Conference Room 1	● Normal	<100 %	● Completed 2022.06.01 09:02:07	● Completed 2022.05.27 12:44:18	180 min	None
Lecture 1_1 Manager Area/Conference Room 1	● Normal	<100 %	● Completed 2022.06.01 09:21:29	● Completed 2022.05.30 18:38:00	180 min	None
Ballast 2_1 Manager Area/Meeting Room 1	● Normal	<100 %	● Completed 2022.05.31 12:12:36	● Completed 2022.05.20 19:39:13	180 min	None
Presentation 1_1 Manager Area/Meeting Room 1	● Normal	<100 %	● Completed 2022.05.31 12:12:48	● Completed 2022.05.27 16:39:04	180 min	None
Screen 1_1 Manager Area/Meeting Room 1	● Normal	<100 %	● Completed 2022.06.01 09:00:43	● Completed 2022.05.23 14:01:51	180 min	None
Ballast 1_1 Manager Area/General Room 1	● Normal	<100 %	● Completed 2022.06.01 09:00:55	● Completed 2022.05.10 22:35:06	180 min	None
Room 1_1 Manager Area/General Room 1	● Normal	<100 %	● Completed 2022.06.01 09:02:19	● Completed 2022.05.10 14:53:03	180 min	None
Ballast 1_2 Manager Area/General Room 1	● Normal	<100 %	● Completed 2022.05.31 16:12:10	● Completed 2022.05.31 00:33:20	180 min	None

N/A = Not Available

Report Header:

Control unit name and S/N, date of the report and number of EL devices.

Report Body:

- Device name, Area and Zone.

- The device state. Following values are possible: Blocked (the feature is locked and the device over the free limit), device not available (no DALI response), Inhibit (Inhibit mode activated on the device, preventing it to go into emergency mode after power interruption), Test in Progress, Fault (the last function test failed), Test out of date, Normal.

- The battery level.

- The function test status. Following values are possible: Completed (incl. date of last test info), Tests out of date, Test in progress, Fixture fault, N/A (when a device is not available).

- The duration test status. Following values are possible: Completed (incl. date of last test info), Tests out of date, Test in progress, Fixture fault, N/A (when a device is not available). The report also displays the minutes it took for the last test to be completed.

- Information regarding faults detected: Circuit Fault, Battery Duration Fault, Battery Fault, Lamp Fault, Battery Level Unknown.

4.1.2 Test configuration

In this section the frequency of the automatic tests, for both function and duration tests, can be set. It is also possible to define the time slot (in hours: minutes) during which, the duration test shall be performed; the possible values are in the range 0:00-23:59.

The default values are: Once per month for the function test and Once per Year for the Duration test.

4.1.3 Email configuration

In this section the user can define the email recipients for the EL reports, as well as for the email notifications, when a fault is detected. It is furthermore possible to define how often the report shall be sent out (weekly, twice or once per month).

Email Recipients

| Enter Name | | Enter eMail Address | | **Add Recipient** |

Name	eMail	
John	john.doe@dummy.com	🗑

E-Mail Report Configuration

☑ Configure Shipment

☐ Once per Month   ☐ Twice per Month   ☑ Weekly

Save Configuration

Send Report by e-Mail now

4.1.3..1   Alert e-mails

Alert e-mails will be sent out within 24 hours following a failure detection. The email notification includes detailed information on the detected error, e.g. the DALI Pro controller, the device name or the error description.

inventronics

⚠ **Attention! Please Check Your Emergency Lighting Installation!**

Hey there!

on **27.06.2022** at **10:30:02** DALI PRO 2 IoT controller **DALIPRO2-77540000** **(77540000)** has detected following errors in the emergency lights :

Device	Zone	Error
Ballast 1_2	**General Room 1**	**Device missing**

Thank you for looking into this matter and ensuring that your installation is working properly!

Alert e-mails will be sent after a test failure (an internal timer of 15min is set, in order to avoid sending out multiple emails within a short timeframe), but also after the detection of an issue during the general inspection of the installation, which is done in

the background by the DALI PRO 2 IoT. Alert e-mails will not be repeated if the detected issue is the same.

4.1.3..2   Report e-mails

The report e-mails will be sent out at preconfigured time intervals and in the email subject and body the user is informed, as to whether there were faults detected in the EL installation that require action.

Hello,

Please find attached the emergency lighting report generated by DALI PRO 2 IoT
DALIPRO2-77540000 (77540000). Some errors have been identified, please check and correct them.

Thank you and wish you a nice day.

Your OSRAM Team

4.1.4 Function Tests summary

A table summarizes the status of the function tests on luminaire level. The table includes following information:

Function Tests summary

| Device Name	Area	Zone	State	Battery	Test Status	Info	Next Test	Trigger Test
Emergency light 1 D	Office Area	Single office	Normal	100 %	Completed 2022.07.08 16:57:54		2022.08.08 16:57:54	☐
Emergency light 2 B	Office Area	Single office	Normal	100 %	Completed 2022.07.08 16:56:29		2022.08.08 16:56:29	☐
Emergency light 3 B	Office Area	Open Office	Normal	100 %	Completed 2022.07.08 16:56:41		2022.08.08 16:56:41	☐
Emergency light 4 D	Office Area	Open Office	Normal	100 %	Completed 2022.07.08 16:56:53		2022.08.08 16:56:53	☐
Emergency light 5 B	Office Area	Corridor	Normal	100 %	Completed 2022.07.08 16:57:05		2022.08.08 16:57:05	☐
Emergency light 6 D	Office Area	Open Office	Normal	100 %	Completed 2022.07.08 16:57:18		2022.08.08 16:57:18	☐
Emergency light 7 D	Office Area	Open Office	Normal	100 %	Completed 2022.07.08 16:57:30		2022.08.08 16:57:30	☐
Emergency light 8 D	Office Area	Corridor	Normal	100 %	Completed 2022.07.08 16:57:42		2022.08.08 16:57:42	☐

Clear selection   Start selected   Start All

- **Device name**: The EL luminaire name
- **Area**: The area it is located
- **Zone**: The zone it belongs to
- **State**: The device state. Following values are possible: Blocked (the feature is locked and the device over the free limit), device not available (no DALI response), Inhibit (Inhibit mode activated on the device, preventing it to go into emergency mode after power interruption), Test in Progress, Fault (the last function test failed), Test out of date, Normal, N/A (the device state info is not available).
- **Battery**: The battery level.
- **Test Status**: The function test status. Following values are possible: Completed (incl. date of last test info), Tests out of date, Test in progress, Fixture fault, N/A (when a device is not available), No Dali Answer, Test Pending.
- **Info**: Information regarding faults detected, including Circuit Fault, Battery Duration Fault, Battery Fault, Lamp Fault, Battery Level Unknown.
- **Next Test**: The date when the next test is going to take place.
- **Trigger Test**: The user can select devices to trigger a function test. This manual trigger starts the test as soon as possible, overriding any automatic scheduling settings.

4.1.5 Duration Tests summary

A table summarizes the status of the duration tests on luminaire level. The table includes following information:

Duration Tests summary

Device Name	Area	Zone	State	Battery	Test Status	Info	Next Test	Trigger Test
Emergency light 1 D	Office Area	Single office	Normal	100 %	👍 Completed 2022.07.08 20:45:37		2023.07.08 20:45:37	☐
Emergency light 2 B	Office Area	Single office	Normal	100 %	👍 Completed 2022.07.08 20:06:17		2023.07.08 20:06:17	☐
Emergency light 3 B	Office Area	Open Office	Normal	100 %	👍 Completed 2022.07.08 20:06:29		2023.07.08 20:06:29	☐
Emergency light 4 D	Office Area	Open Office	Normal	100 %	👍 Completed 2022.07.08 20:44:48		2023.07.08 20:44:48	☐
Emergency light 5 B	Office Area	Corridor	Normal	100 %	👍 Completed 2022.07.08 20:06:41		2023.07.08 20:06:41	☐
Emergency light 6 D	Office Area	Open Office	Normal	100 %	👍 Completed 2022.07.08 20:45:00		2023.07.08 20:45:00	☐
Emergency light 7 D	Office Area	Open Office	Normal	100 %	👍 Completed 2022.07.08 20:45:13		2023.07.08 20:45:13	☐
Emergency light 8 D	Office Area	Corridor	Normal	100 %	👍 Completed 2022.07.08 20:45:25		2023.07.08 20:45:25	☐

Clear selection	Start selected	Stop selected

- **Device name**: The EL luminaire name.
- **Area:** The area it is located.
- **Zone**: The zone it belongs to
- **State**: The device state. Following values are possible: Blocked (the feature is locked and the device over the free limit), device not available (no DALI response), Inhibit (Inhibit mode activated on the device, preventing it to go into emergency mode after power interruption), Test in Progress, Fault (the last function test failed), Test out of date, Normal.
- **Battery**: The battery level.
- **Test Status**: The duration test status. Following values are possible: Completed (incl. date of last test info), Tests out of date, Test in progress, Fixture fault, N/A (when a device is not available), No Dali Answer, Test Pending and Failed. The test fails if the battery discharges before the rated duration has been reached.
- **Info**: Information regarding faults detected, including Circuit Fault, Battery Duration Fault, Battery Fault, Lamp Fault, Battery Level Unknown.
- **Next Test**: The date when the next test is going to take place.
- **Trigger Test**: The user can select devices to trigger a duration test. This manual trigger starts the test as soon as possible, overriding any automatic scheduling settings. If the control gear is not in normal mode, or the battery level is insufficient, then the test is marked as pending.

Please note that upon triggering a duration test, the battery of the device will be completely discharged, and it can take up to 24hrs for it to recharge, during which time the device is not operational!
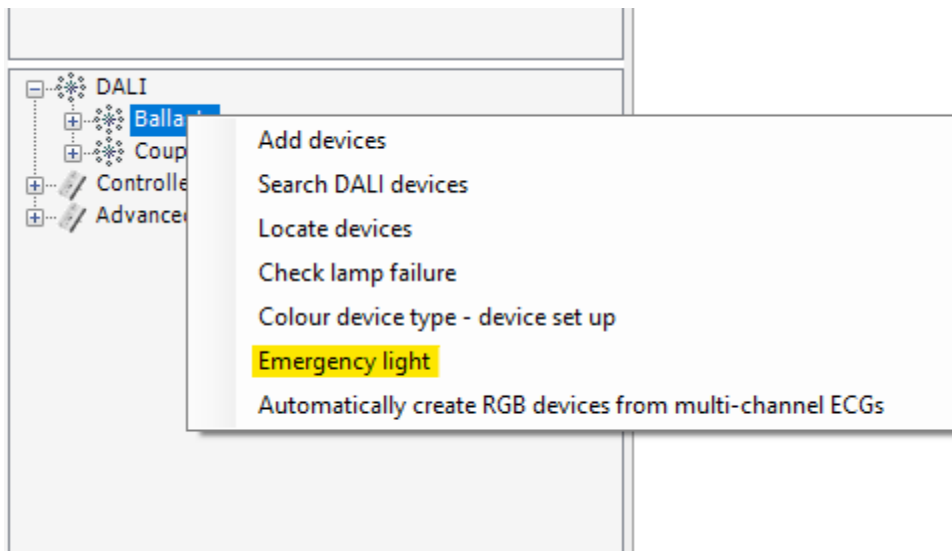
In case the duration test is triggered on all devices, following pop up window will appear:
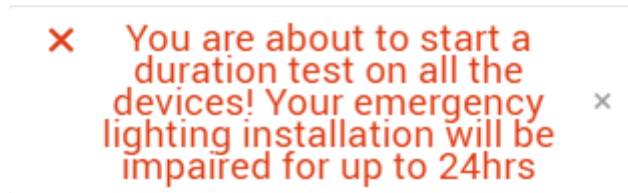
This feature should therefore only be used, if the space will not be occupied in the next 24hrs.

4.2 Via the PC Tool

Connect to the controller, download the project configuration, and right click on "Ballast", to open the Emergency Light feature window.

The EL window will appear, containing 4 different Tabs:

4.2.1 State

An overview of the EL installation is provided here, containing following information:

- Device name

- Port (the DALI line the EL device is connected to)

- DALI Address

- Zone

- State (see description in page...)

- Battery level

- Function Test result (see description in page...)

- Last Function Test date

- Duration Test result (see description in page...)

You can trigger a function or a duration test on a luminaire, a zone or all devices with the respective buttons below the table.

4.2.1..1 Inhibit mode

This mode inhibits a device from entering emergency mode upon normal supply failure and is disabled after a pre-configured time of uninterrupted normal supply. This is especially useful in new projects, to avoid battery wear-out, due to the frequent power supply interruptions in the installation phase. Similarly, if the power needs to be turned off for maintenance reasons e.g., luminaire replacement, activating this feature will prevent the emergency mode.

The DALI PRO 2 IoT user can activate or disable the inhibit mode via the respective buttons in the PC Tool.

4.2.2 Test Configuration

Emergency light

State Configuration Report E-Mail

Function Tests

Active Yes   Enable   Disable

Interval Once per Month   >>

Duration Tests

Active Yes   Enable   Disable

Interval Once per Year   >>

Duration Test Time Window

Active ☑

Only between 22:00 – 6:00   >>

Close

Here you can enable or disable the automatic tests, define the interval for the automatic tests, as well as the time window during which the duration test should take place.

4.2.3 EL Report

Here you can define the time intervals for the report emails (see 4.1.3..2 for more details). You also have an overview of the past reports, which you are able to select and download.

4.2.4 Email configuration

In this section you can define the email recipients for the EL reports, as well as for the email notifications, when a fault is detected (see 4.1.3..1 for more details on the alarm email notifications). It is furthermore possible to define when the next report shall be sent out.

5. Behaviour details

Automated tests on a device will only start if no other device in the same zone is in test mode (all devices with no zone association will be interpreted as in one zone).

The start of the duration test will be also suppressed if it is outside of the defined test time window and if for any other device in the same zone the battery is charged below 90 %. The test time window is only valid for the start of the test. The test can continue to run even after the end of the test window. When configuring the window times, the charging time of the battery should also be considered.

The interval parameter for the function and duration test will be used for:

➢ Triggering of the automatic tests (only if enabled)
➢ Calculation of the outdated test. The function test is outdated if the last test is older than the set interval plus 3 days and the duration test is outdated if the last test is older than the interval plus 5 days.

For example, if the tests are manually triggered, i.e. the automatic tests are disabled, an error notification e-mail will be also sent out if a test on a device is outdated. This e-mail notification procedure will start after the first running test, i.e. the e-mail notification is suppressed after the first installation of the application and until the first tests are running.

If a new error is detected, an e-mail notification will be sent out. This will not influence the defined interval of the report e-mails. Upon error detection, the e-mail will be sent out after 15 minutes at the earliest. If another new error is detected during this time, the 15 minutes delay starts again.