Tuner4TRONIC® Development

Operating Manual

Version 3.15

2021-07-21

Light is OSRAM

Please note:
All information in this guide has been prepared with great care. OSRAM, however, does not accept liability for possible errors, changes and/or omissions. Please check www.osram.com or contact your sales partner for an updated copy of this guide. This technical application guide is for information purposes only and aims to support you in tackling the challenges and taking full advantage of all opportunities the technology has to offer. Please note that this guide is based on own measurements, tests, specific parameters and assumptions. Individual applications may not be covered and need different handling. Responsibility and testing obligations remain with the luminaire manufacturer/OEM/application planner.

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About Tuner4TRONIC

The Tuner4TRONIC (T4T) software suite allows luminaire manufacturers to program OSRAM drivers via DALI and/or NFC in a simple, fast, reliable and cost-effective way, speeding up the production process.
Click here to watch a short video that gives a great overview about Tuner4TRONIC.

The software suite consists of four different modules according to the environment of use:

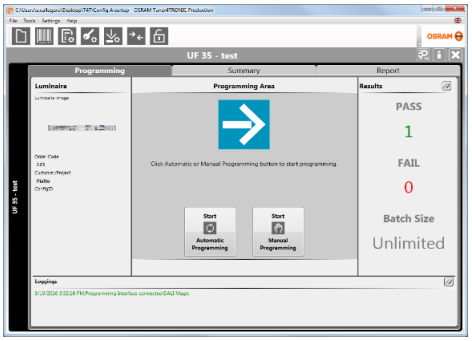
Tuner4TRONIC Development

Luminaire designers can configure LED drivers by setting parameters such as output current, dimming levels, constant lumen output, operating modes and much more. Thanks to its multi-level password system, Configuration Lock protects LED drivers against unauthorized changes while service technicians can still be granted access rights for selected features.
Once the configuration has been completed, the settings are exported as an encrypted read-only production file and transmitted to the production line.



Tuner4TRONIC Production

Factory workers can easily load encrypted production files in order to start automatic programming for the fast mass production of LED drivers. Changes to the LED driver configuration are not possible during this stage. Provides a multilingual user interface.



Tuner4TRONIC Machine

The DLL and command line tools enable to integrate OSRAM LED driver programming into automatic programming stations in the production line.



T4T API

While the Development and Production versions provide the users an intuitive graphical interface, the API („Application Programming Interface“) provides software developers a collection of functions and tools to create luminaire configurations automatically. Typically, the API is used to create luminaire files when a new order is available in the ERP system. The API is based on modern standards (REST) and conventions, comes with a comprehensive documentation and must be integrated into your system by a software developer (OSRAM does not provide ERP system integrations).

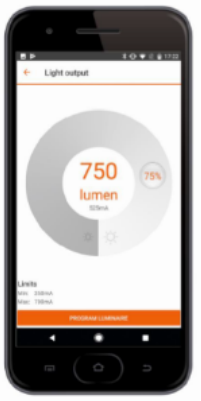
Tuner4TRONIC Field

T4T-Field is an app for smartphones that can program OSRAM outdoor OT 1DIM and OT 4DIM as well as indoor OTi DALI Compact LED drivers via NFC - wireless and without mains-voltage. The app can change the light output and the dimming levels of the driver. In addition, a driver configuration can be copied to another driver in a breeze.

Click here to download the app from Google Play (Android version)

Click here to download the app from the App Store (iPhone version)

This manual does not focus on the T4T Field App. Click here to download the dedicated manual for T4T-Field.



Files Types

Tuner4TRONIC Development uses different file types:

- Tuner4TRONIC luminaire project file = .osrtul
- Tuner4TRONIC production file = .osrtup
- Driver description file = .osrtud

Workflow between the different T4T Versions

The luminaire product manager/designer creates his desired configuration (e.g. setting the operating current, CLO and dimming) using T4T Development. He saves his project as an *.osrtul file. It is possible to test the configuration by programming individual drivers. When the configuration is finished and ready for mass production, a read-only *.osrtup production file is exported and sent to the assembly line.

At the assembly line, the production file is loaded using T4T Production and the mass programming can start. Alternatively, T4T Machine (dll and command line tools) can be used to integrate with automatic programming and testing stations.
Our optional API allows to create luminaire and production files directly from an ERP system removing the need to create those files manually.



Installation

System Requirements

The minimum system requirements for T4T are:

- A programming interface such as:

- OSRAM DALI magic
- NFC programmer (FEIG reader)
- OSRAM Optotronic OT-Programmer

- A PC or Notebook with the following specification
  - Pentium M processor
  - 1 GB main memory
  - Windows 7 (both 32 or 64-bit), Window 8 / 8.1 (both 32 or 64-bit) or Windows 10 (both 32 or 64-bit) latest SP installed
  - 100 MB hard disk memory
  - Monitor with a resolution of 1366x768 pixels, the recommended zoom factor is 100%
  - one free USB 2.0 port to connect a programming interface

Software Installation

NOTE: Always read the "Release Notes" in the zip file before installing the SW.
To install the file you must have Windows administrator rights.
Extract the Tuner4TRONIC zip file into your local hard drive and then run "Install T4T.exe" located in that folder. **Running the Installer from inside the zip file will cause a faulty installation!**
By default, both Tuner4TRONIC Development and Tuner4TRONIC Production will be installed, but there is the option to select only one of them.
Tuner4TRONIC Development and Tuner4TRONIC Production can be launched from "Start" => "All Programs" => "OSRAM" => "Tuner4TRONIC" or by double-clicking the desktop icons.

Hardware Installation

To program a luminary containing an OSRAM driver, a programming interface (suitable for the used driver) is needed:

[1]	Driver with DALI interface (multi and/or single programming)	DALI magic	
[2]	Driver with Prog+/Prog- interface (only single programming)	OT Programmer	

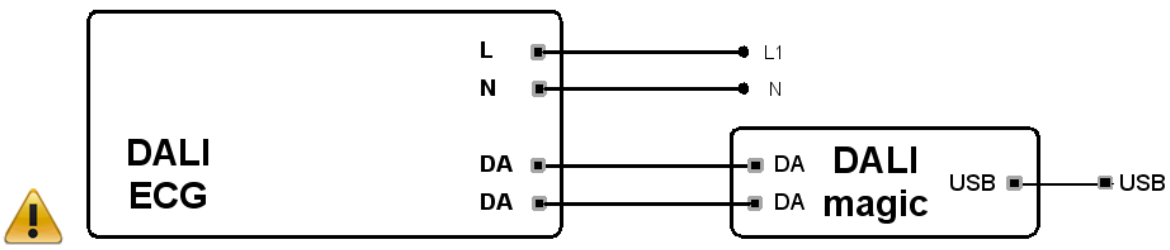
[3]	Driver with NFC interface (only single programming)	FEIG PRH101 FEIG CPR30 FEIG MR102 (using this device a separate antenna is needed e.g. ANT310)	  

Tuner4TRONIC is capable to handle more than one programming interface connected to the same PC (see Programming interfaces chapter).

Preparing a driver with DALI interface for programming

Step	Activity
1	Connect the DALI magic to the PC with an USB cable.
(2)	Connect the external 6V DC power supply to the DALI magic. The use of an external power supply is mandatory in case of more than 4 drivers connected to the DALI line. It is strongly recommended to always use the external power supply in order to improve the stability of the DALI communication.
3	Connect the DALI terminals of the DALI magic with the DALI inputs of the driver(s).
4	Connect the driver to mains and PE if the related terminal is available in the driver.

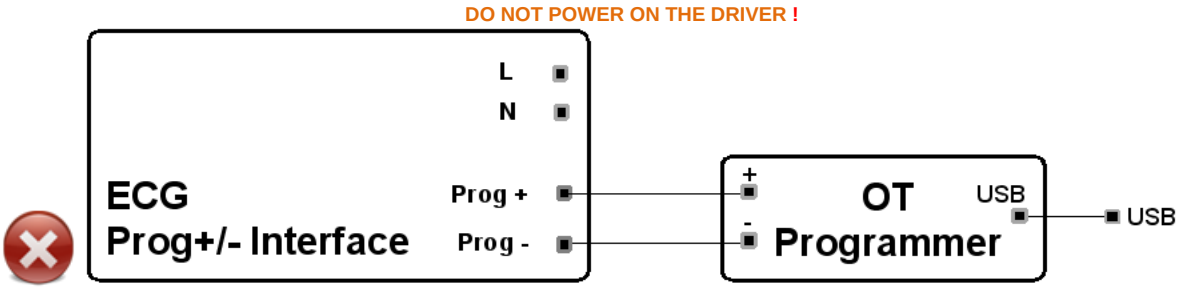
POWER ON THE DRIVER!



NOTE: most of the DALI LED drivers allow programming when supplied with a low voltage (e.g. 48V) instead of the full mains voltage. For further details, please consult the LED driver's datasheets.

Preparing a driver with Prog+/Prog- interface for programming

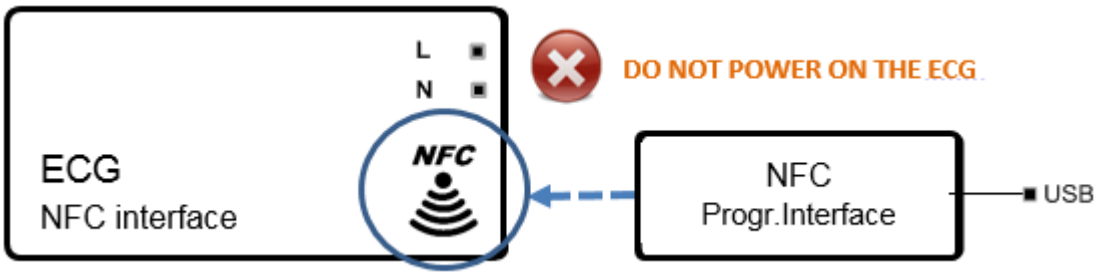
Step	Activity
1	Connect the OT Programmer to the PC with an USB cable.
2	Connect the +/- terminals of the OT Programmer with the Prog+ / Prog- terminals/cables of the driver.



Important Information:
Programming of the driver via Prog+ and Prog- is NOT allowed when the driver is powered with mains on terminals L/N.

Preparing a driver with NFC-Interface for programming

Step	Activity
1	Connect an NFC programming interface from FEIG: PRH101, CPR30 or MR102 to the PC with an USB cable.
2	Put the programming interface in contact with the NFC area of the driver (see NFC logo and arrow on the driver) and hold still both driver and programming interface untill the programming is completed



Important Information:

- Keep the driver powered OFF during NFC programming - unless otherwise indicated in the driver documentation.
- Keep both programming interface antenna and driver with NFC in close contact during the complete programming process.
- Switching on/off an driver with the NFC reader in close proximity may mistakenly terminate the USB connection of the NFC reader's drivers, which leads to T4T complaining that no NFC interface is connected. In this case, please re-connect the reader by opening the Programming Setup or Programming Interfaces Dialog and select it again.

Important Information:

Attention: Production file (.osrtup)  generated with this version 3.3 are not compatible with previous version of Tuner4TRONIC Production, T4T-CMD and T4T-DLL.
The software will interrupt driver programming in case of detected incompatibilities, therefore please update all your production equipment to the latest Tuner4TRONIC version before using new production files.

Compatibility with previous versions of Tuner4TRONIC

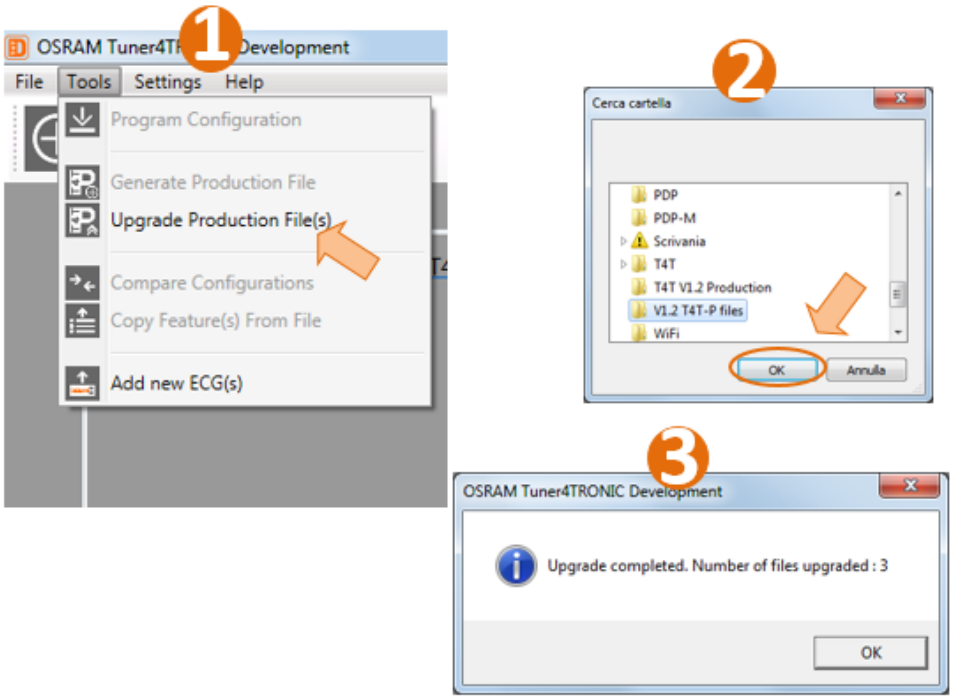
Production files (.osrtup) generated with the previous versions* **from 1.x. to 2.1 cannot be used with the Tuner4TRONIC 3.3 (and higher) anymore.**

Production files (.osrtup) generated with the previous versions from 2.4 to 3.1 can be opened directly with the Tuner4TRONIC 3.3 (and higher). However, as a different data model is used in v3.3 (and higher), Tuner4TRONIC will convert the files on-the-fly to the new version while keeping the original old file unmodified. If you wish to use the file in 3.3 (or higher) we recommend saving a copy of the file as the new format 3.3. (or higher).

In addition, a conversion utility is available in the Tools menu of Tuner4TRONIC Development: "Upgrade Production Files".

NOTE before proceeding:
It's not possible to downgrade the files from version 3.3 (or higher) to previous versions. It's strongly recommended to save a backup copy of the files before upgrading them.

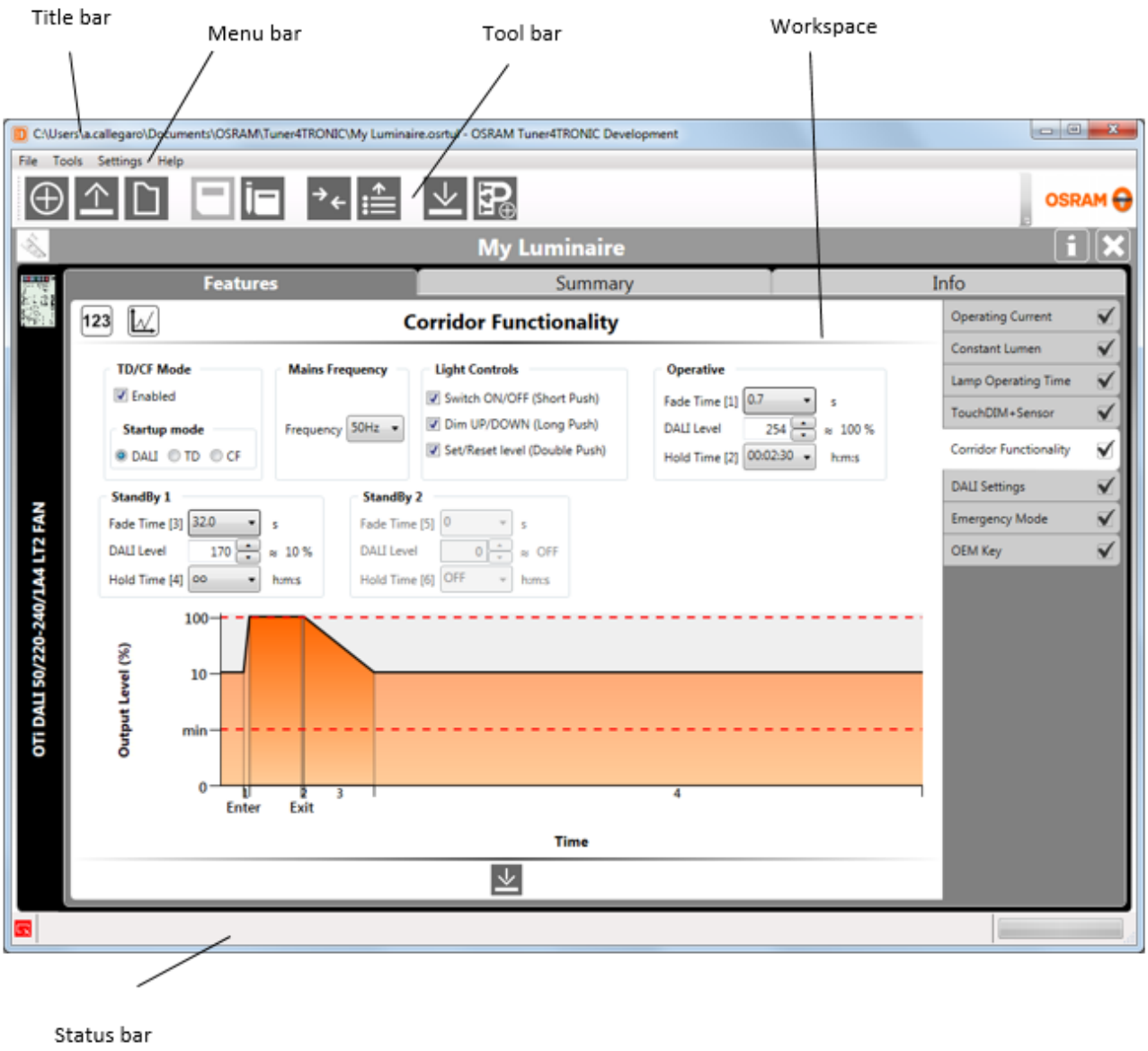
Procedure to upgrade the files from version 2.4 and 3.1:



1. Select "Upgrade Production File(s)" in the Tools menu of T4T Development.
2. Select the folder containing the T4T-P (.osrtup) files made with T4T-D versions 2.4 or 3.1 and confirm by pressing the "OK" button the utility will upgrade all files included in the folder and possible sub-folders.
3. A confirmation message will display the number of files upgraded.Now the files can be used with T4T-Production version 3.3 (or higher)

User Interface

Basic Layout



Menu Bar

The basic functions are available via the menu bar. Submenus or dialogs are opened by clicking an entry in the menu bar. The menu contains the following elements, each with the listed sub items.

File Menu

New	Creates a new Luminaire configuration. By default the loaded configuration will not be saved and the default file name will be "Untitled.osrtul*".
New From Luminaire…	Creates a new Luminaire configuration loading the parameters from the connected Luminaire. By default The loaded configuration will not be saved and the default file name will be "Untitled.osrtul*".
New From Production File	Creates a new Luminaire configuration loading the parameters from a Production file. The loaded configuration will not be saved and the default file name will be "Untitled.osrtul*".
Open	Loads an existing Luminaire configuration.

Save Changes	Saves the current Luminaire configuration.
Save As	Saves the current Luminaire configuration under a new name.
Recently Used Files	List of the recently used Luminaire configurations
Close	Close Tunner4TRONIC.

Tools Menu

Program Configuration	Writes the current Luminaire configuration to the connected Luminaire
Generate Luminaire Production File	Creates the Luminaire Production File for the Tuner4TRONIC Production; the file extension is: .osrtup
Upgrade production file(s)	Makes T4T-P files (.osrtup) of versions 1.x usable with T4T-P version 2.4 or higher.
Compare configuration(s)	Compare actual configuration with the connected luminaire
Copy Feature(s) from File	Copy into actual configuration a feature of a saved project
Add new driver(s)	Load a previously saved driver configuration file

Settings Menu

Programming Interface	Visualize, the connected programming interface(s) and enables the selection of the default one (for each types) to be used only for programming. For reading luminaire's configurations the user has to select the programming interface every time if more than one is available.

About Menu

Help	Shows Tuner4TRONIC User Manual
Info	Opens the Info dialog
Updates	Tuner4TRONIC Remote Updates – Allows the user to Enable or disable Automatic Updates, Check for updates manually, download Tuner4Tronic installer and configure the path to download Tuner4Tronic installer.

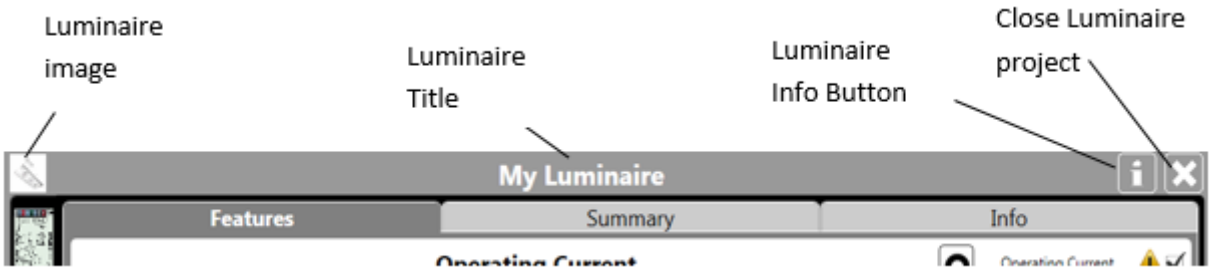
Toolbar
The toolbar provides instant access to the most important actions.

	New	Creates a new Luminaire configuration. By default the loaded configuration will not be saved and the default file name will be "Untitled.osrtul*".
	New From Luminaire	Creates a new Luminaire configuration loading the parameters from the connected Luminaire. By default the loaded configuration will not be saved and the default file name will be "Untitled.osrtul*".
	Open	Loads an existing Luminaire configuration.
	Save	Saves the current Luminaire configuration.

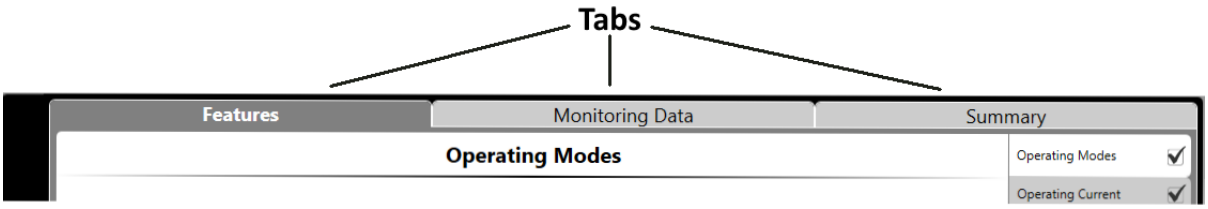
	Save As	Saves the current Luminaire configuration with a new name.
	Compare Configuration(s)	Compare actual configuration with the connected luminaire.
	Copy Feature(s) from File	Copy into actual configuration a feature of a saved project
	Program Configuration	Writes the current Luminaire configuration to the connected Luminaire
	Generate Luminaire Production File	Creates the Luminaire Production File for the Tuner4TRONIC Production; the file extension is: **.osrtup**

Workspaces

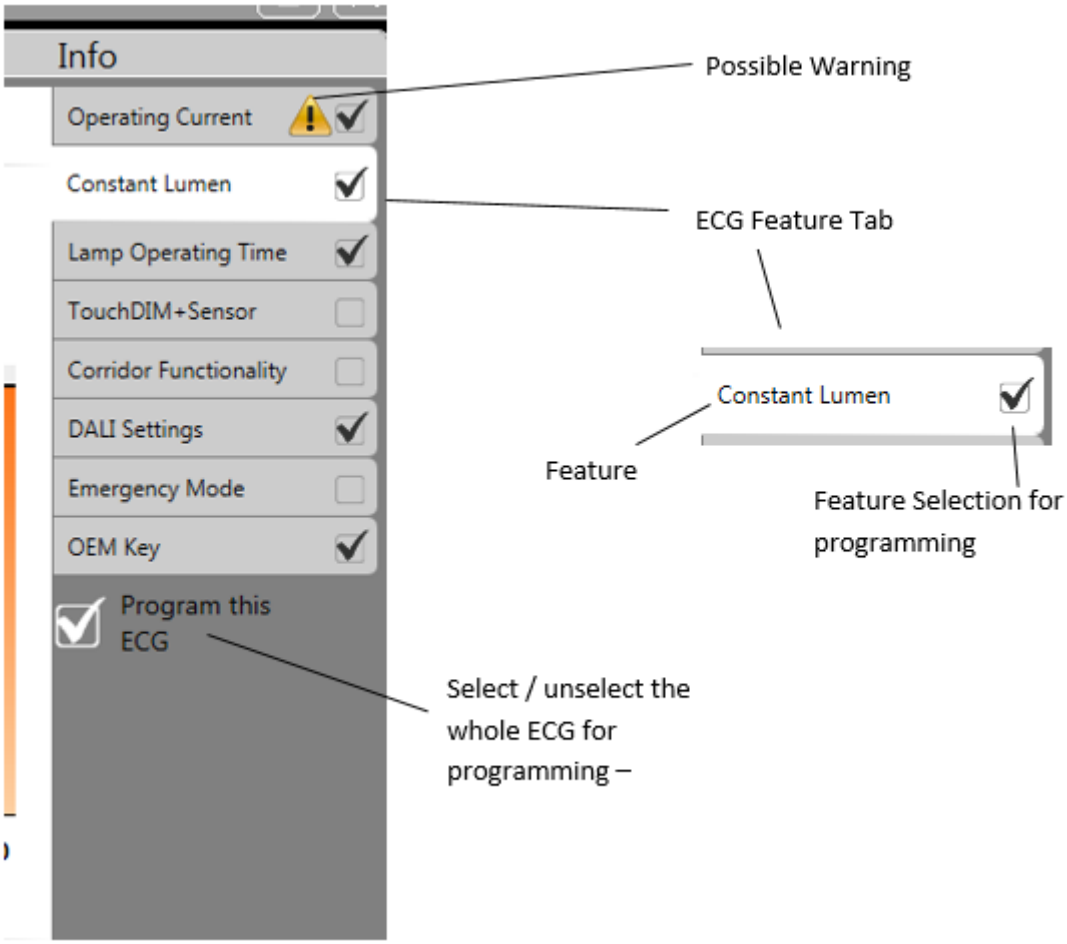
Luminaire Area



Driver Tab Control



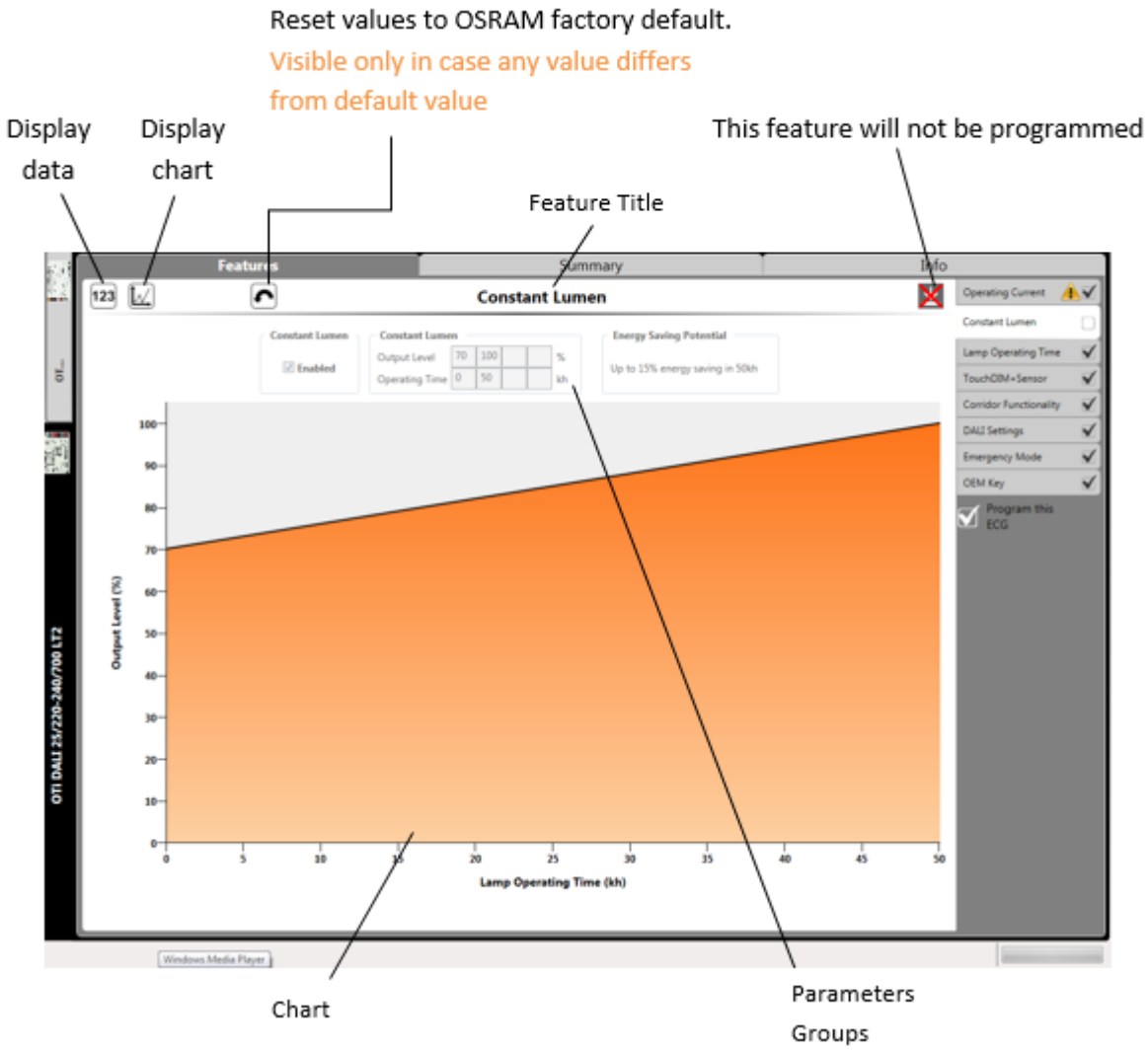
Features Tab Control



The Features list contains only the features supported by the selected driver.
Always refer to the driver's technical documentation for the supported features.

NOTE: unselecting a feature from programming does not mean *deactivating* it.

Feature Area



Parameter Groups
The parameters of the feature are collected into Parameter Groups.

Feature Selection State
This symbol is displayed only in case the feature is not selected to be programmed (through the check box in the feature tab).

Chart
Displays in a graphical way the values input in the parameters (optionally available).

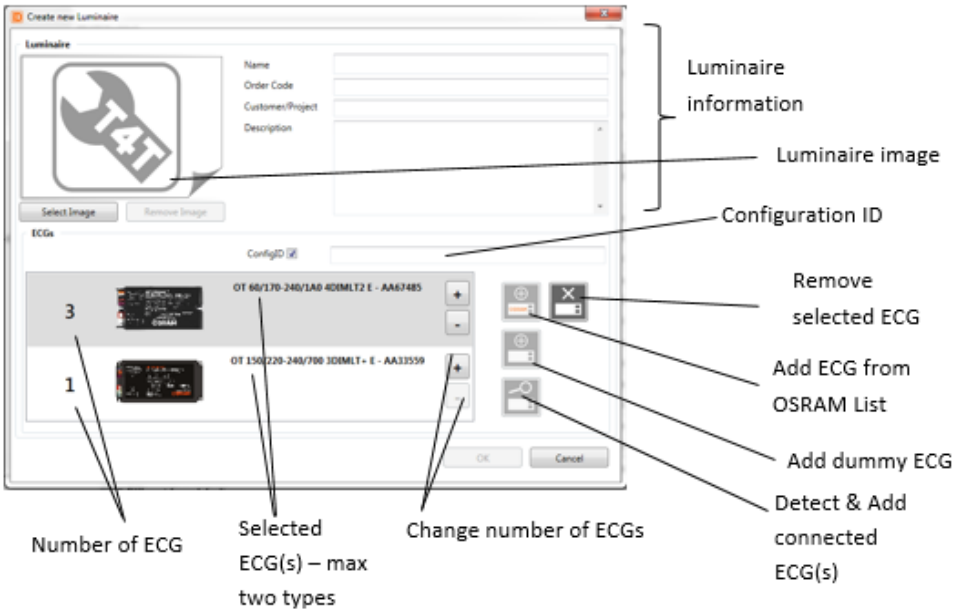
Status and Progress Bar

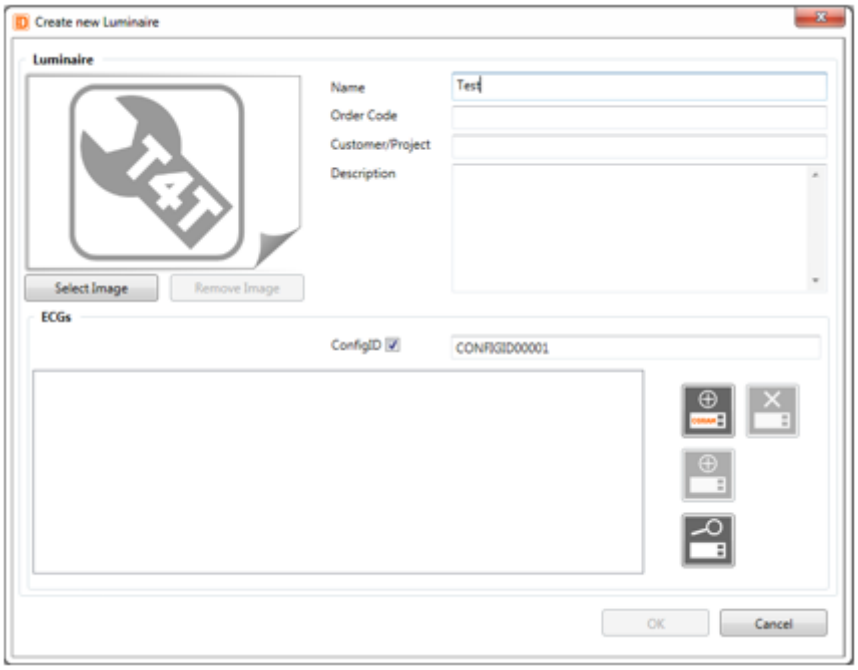
It displays the progress of the currently executed task, like read/program luminaire.

General Operation

Create a new Luminaire Configuration

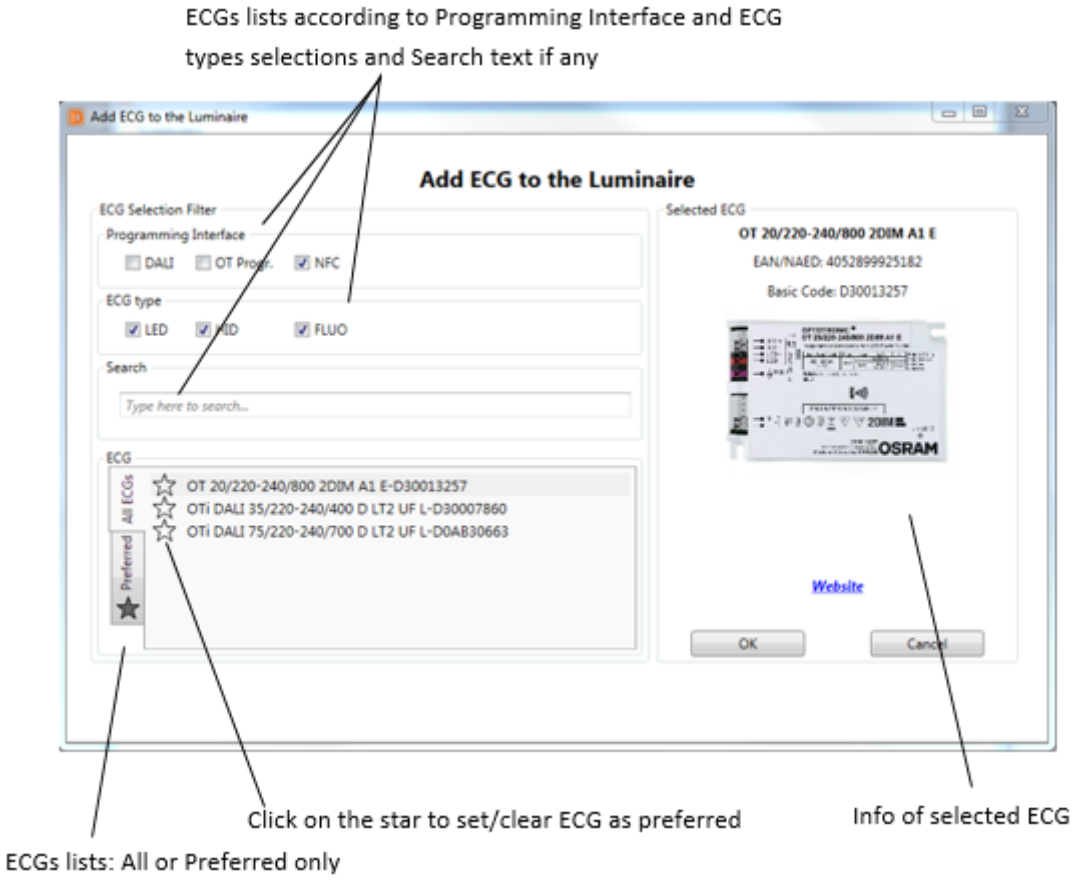
Scope: create a new project starting from factory new drivers.

Step	Activity
1	Click "File", "New…" in the menu bar or use the  button in the toolbar.  NOTE: this window is always accessible using the Luminaire info button 
2	Set luminaire image (optional).
3	Fill Luminaire information.
4	

	Config ID-Enter a ConfigID to be programmed to the device.Config ID checkbox-Option to select whether the ConfigID is to be programed or not. If the Config ID is not selected for programming then Config ID text box will be hidden. 
5	Select driver(s) using the buttons:  ,  or  Remove possible unwanted driver using the button  NOTE: a luminaire could contain more than one driver; up to two different types are allowed and the multiplicity of each type depends on the used programming interface (so far only multiple DALI drivers are allowed up to 64 in total)
6	Click OK button to create the project. This button is active only if all the mandatory information was entered correctly. The project will not be saved on Click of OK button and the default file name will be "Untitled*".
7	If the luminaire has a Config ID, the default luminaire name will be the "luminaire name-Config ID".

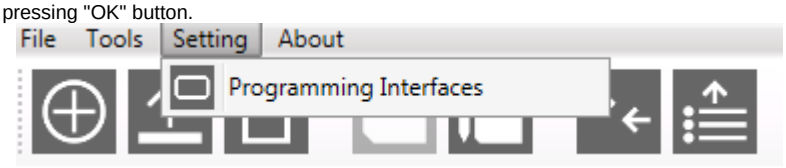
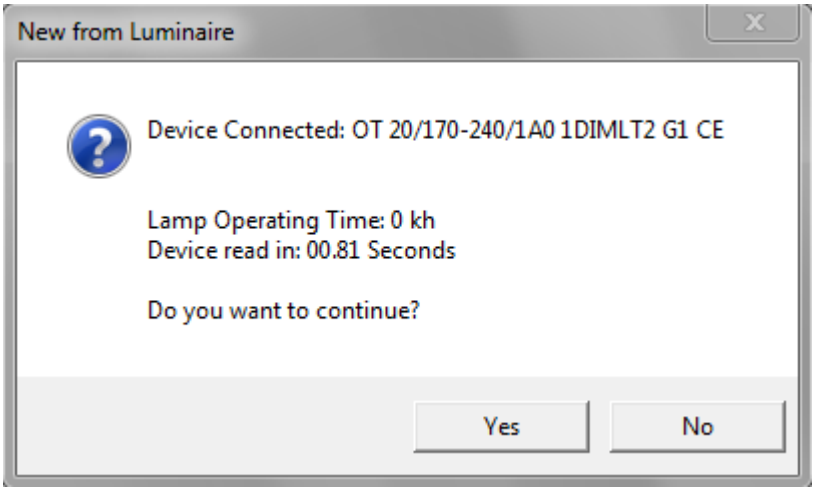
OSRAM drivers list ( **)**

OSRAM driver(s) are listed according to the Programming Interface and driver types and also Search text. It's possible to define preferred driver(s) in order to speed up the selection of the most used ones.


ECGs lists according to Programming Interface and ECG types selections and Search text if any
Add ECG to the Luminaire
Add ECG to the Luminaire
ECG Selection Filter
Programming Interface
DALI
OT Progr.
NFC
ECG type
LED
MD
FLUO
Search
Type here to search...
ECG
All ECGs
Preferred
OT 20/220-240/800 2DIM A1 E-D30013257
OTi DALI 35/220-240/400 D LT2 UF L-D30007860
OTi DALI 75/220-240/700 D LT2 UF L-D0AB30663
Selected ECG
OT 20/220-240/800 2DIM A1 E
EAN/NAED: 4052899925182
Basic Code: D30013257
Website
OK
Cancel
Click on the star to set/clear ECG as preferred
Info of selected ECG
ECGs lists: All or Preferred only

Create new Luminaire Configuration from Luminaire

Scope: create a new project by reading the whole configuration of the connected luminaire.

Step	Activity
1	Select from the Settings menu which programming interface has to be used to readout the luminaire, in case more than one is connected to the PC. Please confirm by pressing "OK" button. 
2	Click "New from Luminaire"  in the toolbar or in the File menu.
3	On successful read, a dialog will display the following information. • Device connected with Device type name • The time taken to read from the device. • The encrypted OEM key, if the driver is password protected • The Lamp operating time, if the feature is supported in the driver.  On click of "Yes", the Main window shall be loaded with all features and the file will be named "Untitled.osrtul*" else will remain in the same screen.A production file cannot be generated if the configuration is not saved.
4	Continue as described in previous "Create new Luminaire Configuration" paragraph on click of Save or Save As.

Open a Luminaire Configuration

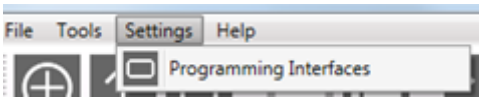
Step	Activity
1	Click "Open"  in the toolbar or in the File menu.
2	Select the proper file with extension .osrtul.
3	Open the configuration by double-clicking. The name of the loaded configuration appears in the header of the Tuner4TRONIC.

Add driver(s)Scope: add new OSRAM EGC to the list without the need to reinstall the whole SW.

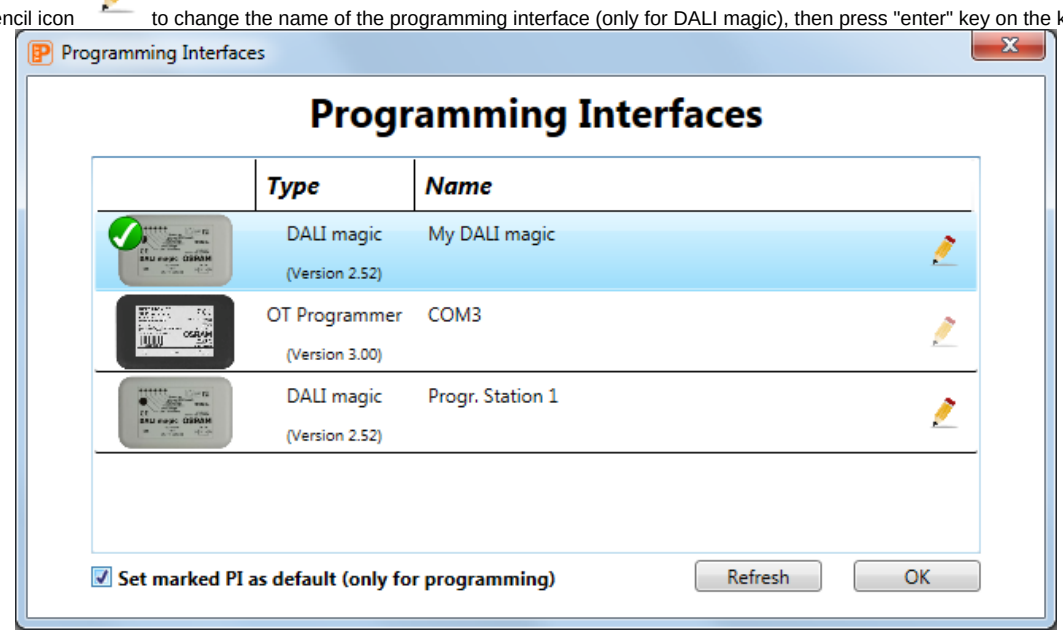
Step	Activity
1	Click "Add new driver(S)"  in the in the Tools menu.
2	Select the proper file with extension .osrtud.
3	Open the file by double-clicking. When loaded the driver will appear on the OSRAM driver list

Setting the Programming Interface

Scope: This dialog shows all current connected driver programmer to the PC and allows each type to define the default one for programming.
Go to the Settings menu and select Programming Interfaces.



Click on the pencil icon  to change the name of the programming interface (only for DALI magic), then press "enter" key on the keyboard.



Programming a Luminaire

Scope: Lab test of the luminaire; write configuration into the luminaire, for the engineering purposes without generating the production file and without using the Tuner4TRONIC Production.

Activity

Click "Program configuration"  in the toolbar or in the Tools menu. The Programming Setup Dialog with the following options appears.

Program as... (available in with the premium license only)

This feature can only be used in conjuction with the Configuration Lock. Please see the chapter of the Configuration Lock for more information.

Master

If driver features have been protected using "Master only" in the Configuration Lock, to reprogram the driver this mode needs to be selected. In the field below, "Protected" has to be selected and the corresponding Master Key has to be entered in the field below.

Service

If selected driver features have been protected using "Service and Master" in the Configuration Lock, to reprogram the driver this mode needs to be selected. In the field below, "Protected" has to be selected and the corresponding Service Key has to be entered in the field below. In this case only the features with Service Key access can be reprogrammed. Only features checked as "Service and Master" can be programmed. Selecting this mode and trying to program features that have no Service Key permission leads to a programming error.

User

If selected driver features have been protected using "Everyone" in the Configuration Lock, to reprogram the driver this mode needs to be selected. In the field below, "Not Protected" can be selected. Only features checked as "Everyone" can be programmed, slecting this mode and trying to program other features without permission leads to a programming error.

Set current Luminaire Lock Status:

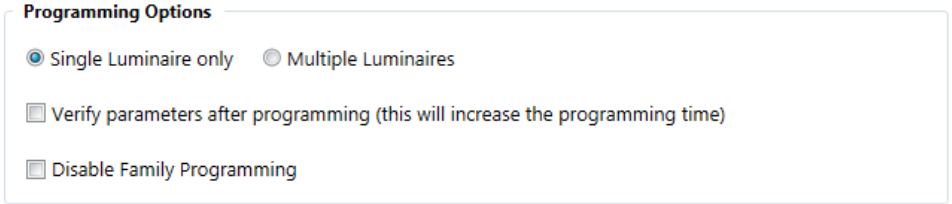
1. **Unprotected.** The Luminaire has no Configuration Lock Master Key or OEM key set.
2. **Protected.** The Luminaire is locked thus it is needed to unlock it before proceeding with the programming:
   - **Use Key form file.** Use this option if the code needed to unlock equals the one set in the Configuration Lock or OEM Key feature.
   - **Key __ __ __ __ .** Input the code to unlock (which can be different from the one in the Configuration Lock or OEM Key feature). If the Configuration Lock or OEM Key feature is selected, after programming, the Luminaire will be locked using the code of the Configuration Lock or OEM Key feature.

     Important Information about the protection of luminaire configurations
     We strongly advise to set a password to avoid unintentional or unauthorized adjustment of crucial parameters that might lead to damage or non-safe operation of a luminaire. Please also consider the required luminaire certifications and the effect of parameter adjustments on the validity of such certifications.

Other settings (Programming Options):

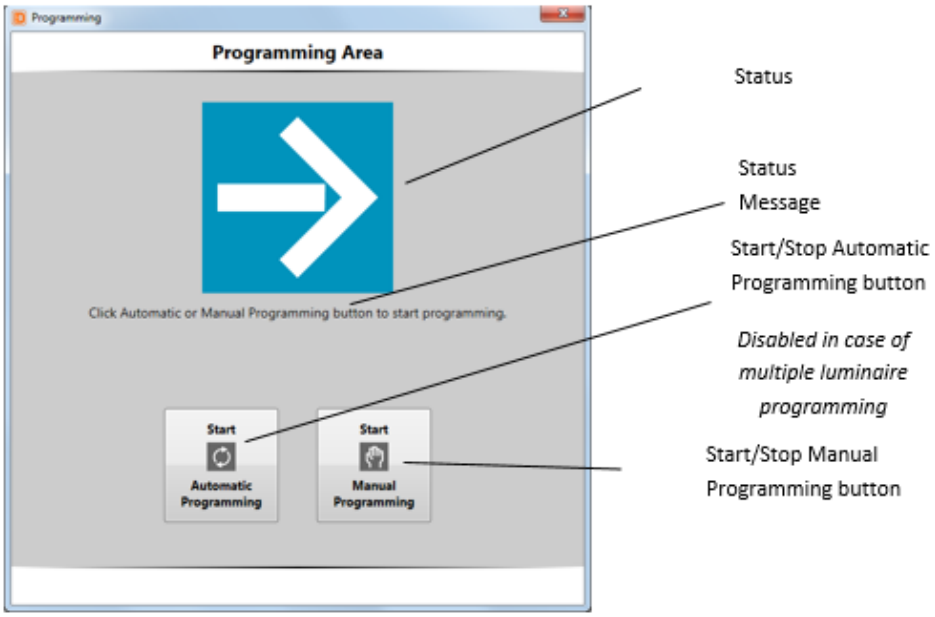
1. **Single Luminaire only**: select this option if the programming station processes only one luminaire at a time, this will speed up the programming (less time to detect the luminaire).
2. **Multiple Luminaires**: select this option if the programming station processes more than one DALI luminaire at a time (automatic sequential programming); DALI addressing is performed before programming, then after programming is completed all short addresses are cleared. These two previous settings are only available for devices with DALI terminals only.
3. **Verify parameters after programming:** after programming, the configuration is read back and compared with the one just programmed. This slow down the overall programming speed. This option is not available in case a NFC Reader is selected as the programming interface.
4. **Disable Family Programming**
   The term "Family Programming" refers to the capability of T4T to be able to program LED drivers within the same or later generation of one product family using the same production file, thus simplifying the production workflow. For further details on Family Programming refer to the section below.

   By default, family programming is turned on. Turning off this option means that T4T will only program the exactly specified driver model (i.e. only drivers with the same name and firmware version will be programmed). The Family Programming can be disabled by this option.



Click here for more information about Family Programming.

Click OK to move to the programming dialog.

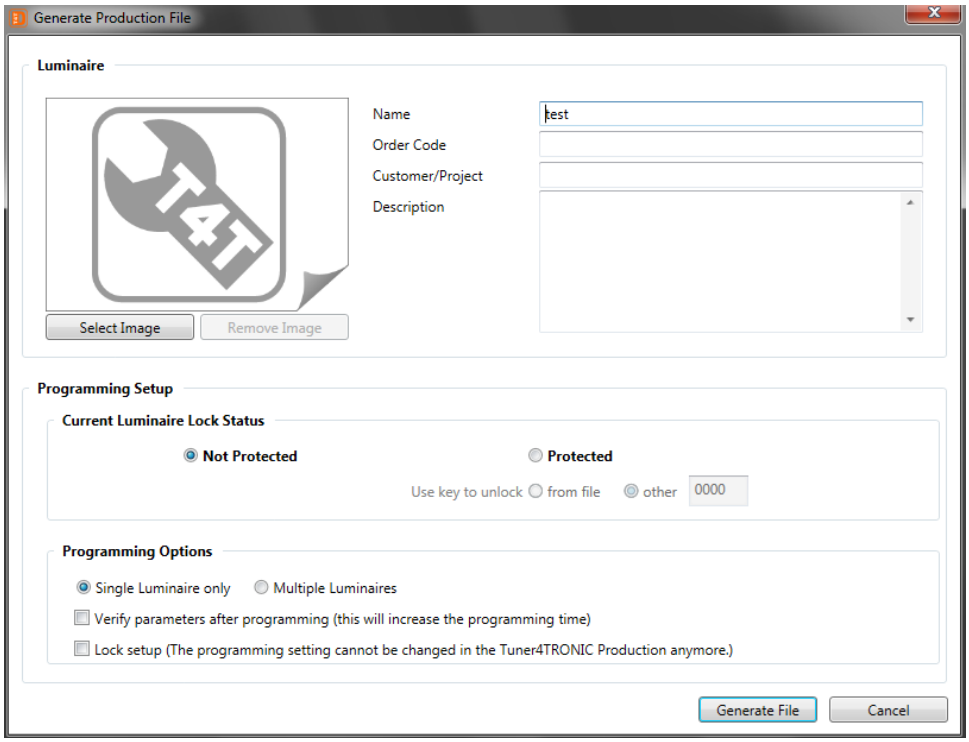


Create the Luminaire Production File

Scope: ready for mass production; provide the shop floor with the configuration file (.osrtup) to be programmed into the luminaires by operators using Tuner4TRONIC Production, or using a third party SW based on T4T-DLL or T4T-CMD (see related user manuals for further details) .

Activity

Click "Generate Production File…" from the Tools menu in the menu bar or select the  button in the main toolbar. The Programming Setup Dialog with the following options appears.



Luminaire
Fill in the Luminaire information here (name is mandatory), including an image. This info will be available in the reports and also displayed in the operator's mask of Tuner4TRONIC Production to help the programming activity (visual aid).

Program as... (available in with the premium license only)

This feature can only be used in conjuction with the Configuration Lock. Please see the chapter of the Configuration Lock for more information.

Master

If driver features have been protected using "Master only" in the Configuration Lock, to reprogram the driver this mode needs to be selected. In the field below, "Protected" has to be selected and the corresponding Master Key has to be entered in the field below.

Service

If selected driver features have been protected using "Service and Master" in the Configuration Lock, to reprogram the driver this mode needs to be selected. In the field below, "Protected" has to be selected and the corresponding Service Key has to be entered in the field below. In this case only the features with Service Key access can be reprogrammed. Only features checked as "Service and Master" can be programmed. Selecting this mode and trying to program features that have no Service Key permission leads to a programming error.

User

If selected driver features have been protected using "Everyone" in the Configuration Lock, to reprogram the driver this mode needs to be selected. In the field below, "Not Protected" can be selected. Only features checked as "Everyone" can be programmed, slecting this mode and trying to program other features without permission leads to a programming error.

Current Luminaire Lock Status

1. **Unprotected.** The Luminaire has no Configuration Lock Master Key or OEM key set.
2. **Protected.** The Luminaire is locked thus it is needed to unlock it before proceeding with the programming:
   - **Use Key form file.** Use this option if the code needed to unlock equals the one set in the Configuration Lock or OEM Key feature.
   - **Key __ __ __ __ .** Input the code to unlock (which can be different from the one in the Configuration Lock or OEM Key feature). If the Configuration Lock or OEM Key feature is selected, after programming, the Luminaire will be locked using the code of the Configuration Lock or OEM Key feature.

     Important Information about the protection of luminaire configurations
     We strongly advise to set a password to avoid unintentional or unauthorized adjustment of crucial parameters that might lead to damage or non-safe operation of a luminaire. Please also consider the required luminaire certifications and the effect of parameter adjustments on the validity of such certifications.

Other settings (Programming Options)

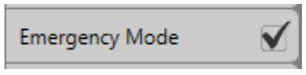
1. **Single Luminaire only**: select this option if the programming station processes only one luminaire at a time, this will speed up the programming (less time to detect the luminaire).
2. **Multiple Luminaires**: select this option if the programming station processes more than one DALI luminaire at a time (automatic sequential programming); DALI addressing is performed before programming, then after programming is completed all short addresses are cleared. These two previous settings are only available for devices with DALI terminals only.
3. **Verify parameters after programming:** after programming**,** the configuration is read back and compared with the one just programmed. This slow down the overall programming speed. This option is not available in case a NFC Reader is selected as the programming interface.
4. **Disable Family Programming** The term "Family Programming" refers to the capability of T4T to be able to program LED drivers within the same or later generation of one product family using the same production file, thus simplifying the production workflow. For further details on Family Programming refer to the section below.

   By default, family programming is turned on. Turning off this option means that T4T will only program the exactly specified driver model (i.e. only drivers with the same name and firmware version will be programmed). The Family Programming when using the Production File to be generated can be disabled via this option.

   Click here for more information about Family Programming.

When completed, click "OK" button to proceed: select folder for saving the file and click on "SAVE" button.

Select/Unselect a Feature for Programming

Step	Activity
1	Selected Feature. 

	The selected features will be programmed with the settings on screen. NOTE: • at least one feature shall be selected in order to be able to create a Luminaire Production File, • some features can be selected / unselected only together with others because of restrictions which varies according to the driver type.
2	Unselected Feature.  The unselected features will NOT be programmed, thus after the programming process is completed, the unselected features have the same settings as before programming. **NOTE: unselecting a feature does not mean deactivating it**. Example: if only the Operating Current is selected for programming, only the operating current settings is updated during programming, all remaining features keep their previous values and status.

Family Programming

The term "Family Programming" refers to the capability of T4T to be able to program LED drivers within the same or later generation of one product family using the same production file, thus simplifying the production workflow. A product family is defined as a group of related LED driver models of the same target application and similar physical characteristics, but can differ in the name, firmware version, current and/or power. Generations typically differ in the set of included features.

Family Programming will fail when the capability of the target driver are not sufficient for the configuration defined in the (source) production file. For example, if a (target) driver supports only 1A, but the source configuration has selected 1,2A, then the program must (and will) fail.

Moreover, Family Programming only works forward (e.g. from a G2 driver to a G3 driver), not backward (e.g. from a G2 driver to a G1 driver). The reason is that later generations introduce new features that may not be available in the older generation. Therefore the usage of a production file created for a newer generation for programming of an old driver is not possible. When drrivers of different generations are mixed in the production, the recommended usage is to create a projects / production files based on the older drivers of a family. When newer features shall be used, a new production file has to be created and only the newer drivers can be used.

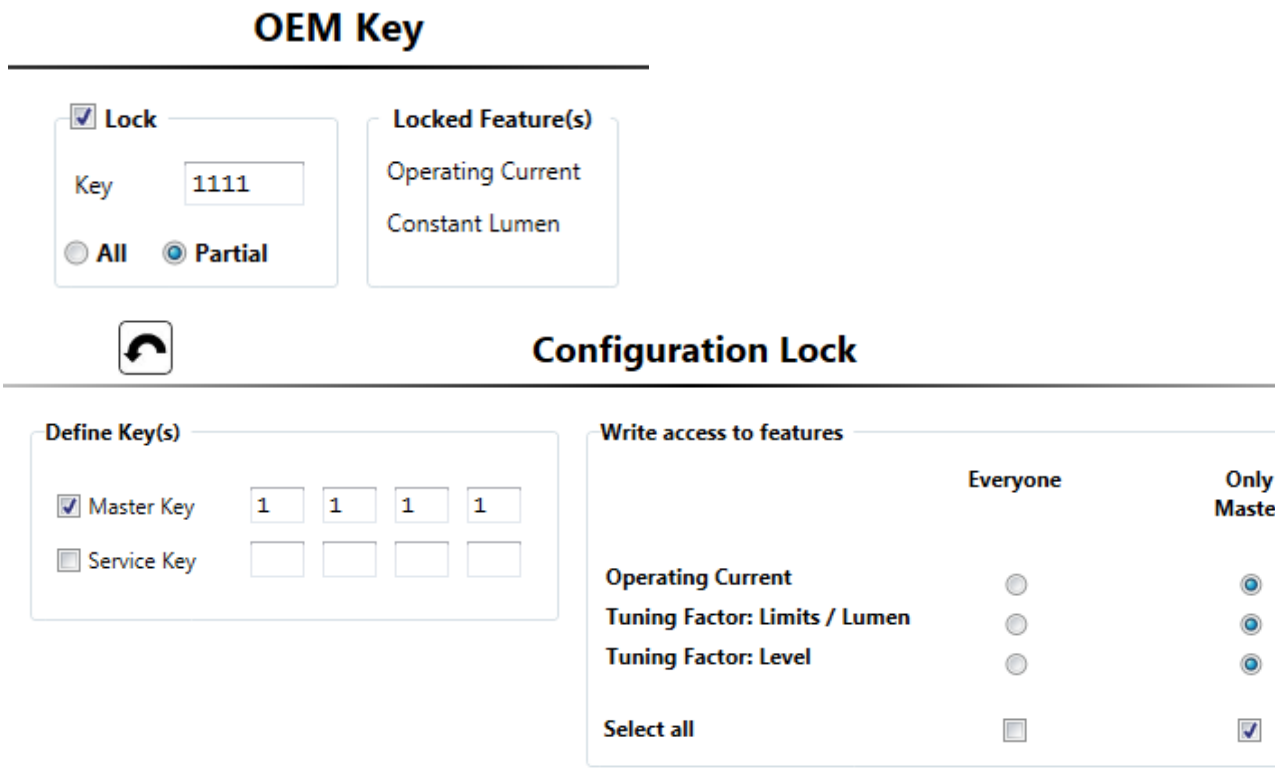
By default, family programming is turned on. Turning off this option means that T4T will only program the exactly specified driver model (i.e. only drivers with the same name and firmware version will be programmed). Family Programming can be disabled in the Programming Setup(s) as described above.

A list of all supported and unsupported drivers of family programming is provided at Appendix 1 of this document.

Restrictions

The family programming has some inherit restrictions. If a project was defined for the driver of an older generation but the project is used for the driver of a newer generation and some features of the new generation are upgraded. Then a mapping has to happen with these parameters. There are the following cases:

- If the OEM Key protection (Partial or All) was used on a production file and the same production file is used on new generation drivers, which uses the Configuration Lock feature, then the OEM Key will be used as a Master Key protecting all driver features. Below is an example:



Click here to go to the list of all driver families.

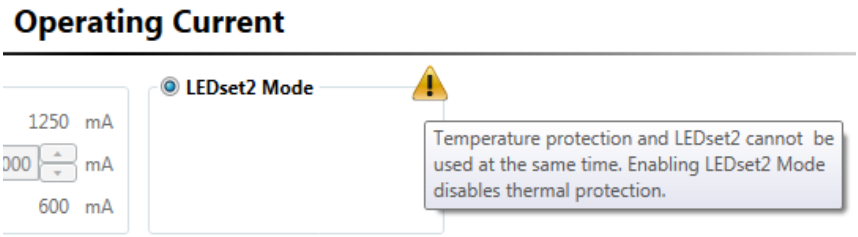
Driver Features

The following chapter explains the driver features in T4T. Depending on the driver you use, the features supported by the driver will be available.

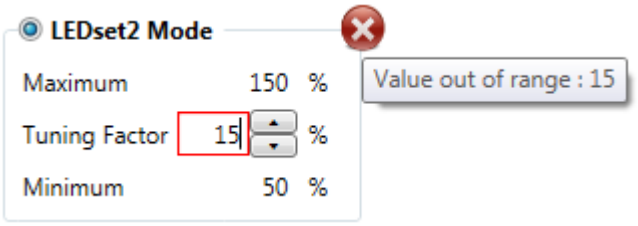
Always refer to the driver's technical documentation for the available features and detailed operating instructions.

Important notice:

- Some parameters can be set out of the rated range: In that case, the value is displayed in red. Always refer to the driver technical documentation to understand the consequence of a parameter set out of the rated range.
- Some parameters settings are not compatible with other parameters in the same or in different features. In case that happens, a warning message or symbol is displayed.
  For example in 2DIM drivers the LEDset mode is not compatible with Temperature Protection Feature.

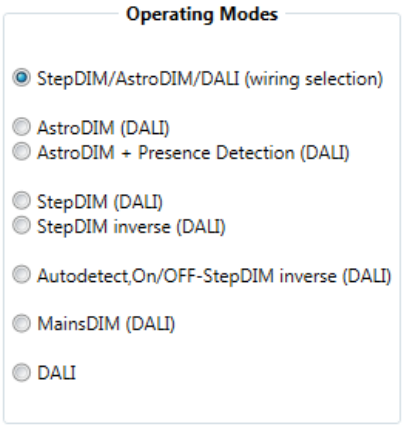


An error icon is displayed on the respective group boxes with tooltip indicating the cause of error in case the values are out of the specified range (e.g.4DIM driver with a Tuning factor below the minimum value of 50%).



Operating Mode

The first choice the user has to make is selecting the Operation Mode , i.e. how the driver shall dim and operate, e.g. TouchDIM for indoor or AstroDIM for outdoor. There are standard modes (e.g. DALI DT8) and OSRAM proprietary modes. Which mode is available depends on the selected driver.
The following list is an example from a 3DIM driver. In this example, when selecting "StepDIM (DALI)", it means that StepDIM will be used (even if there is no DALI available) but if there is DALI, then DALI will have priority.

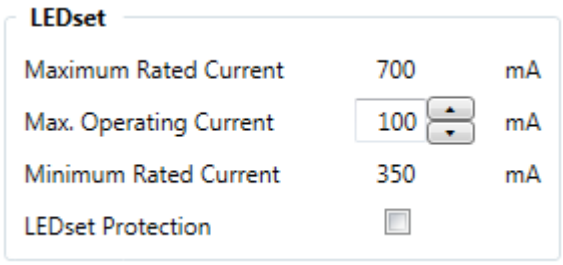


Operating Current

This feature is used to adjust the output current of the LED driver. Different ways of setting the current are possible according to the LED driver interface type (LEDset / LEDset2). LEDset2 is a multi-vendor LED module interface which allows to set the operating current for the LED module by using a resistor, without the necessity to reprogram the LED driver if an LED module has to be replaced by a newer generation. This ensures optimal efficacy and the right amount of light at all times
Compared to setting the current by using the LEDset2 interface, a higher current accuracy can be achieved by using the fixed current mode and programming with Tuner4TRONIC (no resistor needed).

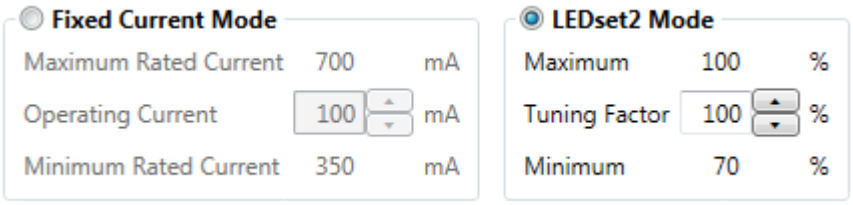
LEDset(1)

For drivers with the LEDset interface (1st generation) the ***Maximum Operating Current*** can be set via this dialog between the *Maximum Rated Current* and the *Minimum Rated Current*.
For some LED drivers , the operating currents lower than the *Minimum Rated Current* can be set; in this case the *Max. Operating Current* is displayed in red color, to highlight that the value is out of the rated range of the driver.
The check box ***LEDset Protection*** enables the LEDset protection behavior. Please consult the LEDset application guide (1st generation) for further information.



LEDset2

For drivers with the LEDset2 interface (2nd generation) two operation modes can be selected: Fixed Current Mode or LEDset2 Mode



Fixed Current Mode

In the fixed current mode the output current is set to the *Operating Current* value between the *Maximum Rated Current* and the *Minimum Rated Current*. In this mode the LEDset2 interface is disabled.
Some LED drivers allow also a current set lower than the *Minimum Rated Current*. In this case the *Operating Current* value is displayed in red, highlighting it is out of the rated operating range of the LED driver.
For further information please consult the device specific technical description; for example concerning the allowed operating current range and tolerance.
NOTE: in some LED drivers this value defines also the output current "LEDset2 Mode" is selected and a short circuit is applied on LEDset2 terminals

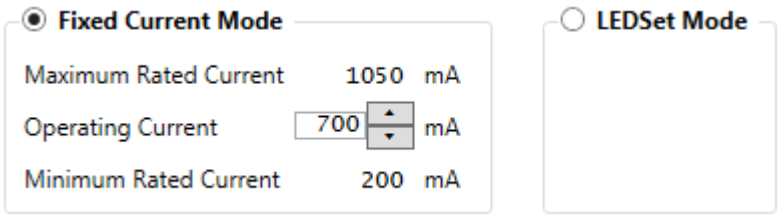
LEDset2 Mode

In the *LEDset2 Mode* the *output current* is defined via the LEDset2 interface and can be adjusted by the *Tuning Factor* between the *Maximum* and *Min imum* values, if supported by the driver. This factor can be used to fine-tune the light output for modules with a predefined lumen package.

```
Output current [mA] = LEDset2 current [mA] x Tuning factor [%]
```

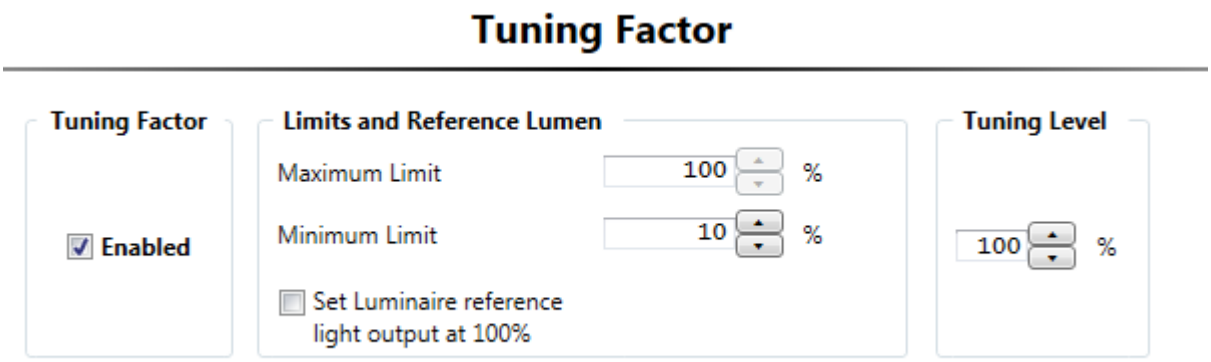
LEDSet

In the latest OSRAM LED drivers here is how the feature looks like. The Tuning Factor is moved to an own Feature tab with extended functions (see next paragraph).



Tuning Factor

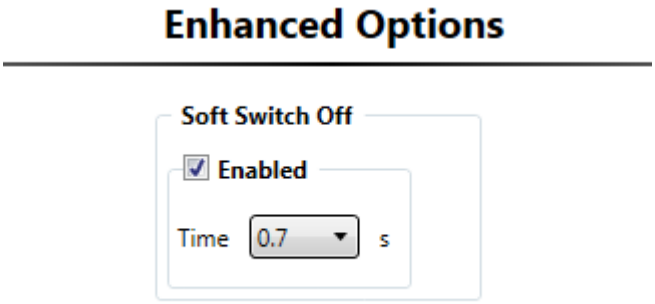
This feature allows to set a maximum and a minimum limit that the T4T Field app user will be able to modify the light output levels of the drivers.
A reference lumen value (for 100% of the Tuning level) can also be added. Activating the reference Lumen will show the T4T Field app user the Tuning Level values Lumen, mA and %. Not activating the reference Lumen shows the T4T Field app user the Tuning Level values only in mA and %. In addition, the default light output level (Tuning Level) can be set up in %. Please note that the maximum limit level can only be as high as the Tuning Level value. Lower the Tuning Level first to lower the Maximum Limit.
100% of the Tuning Level equals the operating current set on the driver on the Operating Current tab.



IMPORTANT NOTE: Changing the tuning factor affects the driver Emergency Mode DALI level!
We don't recommend allowing the modification of the Tuning Factor via the T4T Field app for Emergency Lighting as safe operation can be endangered.

Soft Switch Off

As soon as the device receives a switch-off command by a control interface (e.g. Touch DIM or DALI), this feature dims the device down to zero nearly logarithmically, and with pre-defined delay times. This function is supposed to simulate the behavior of traditional halogen lamps. If supported by a driver, Soft Switch Off is available when one of the following Operating Modes is selected: "DALI & Enhanced Options", "TouchDIM" or "Corridor Functionality".



This feature can be selected by the Enabled check box. The Soft Switch Off time can be selected from the values in the drop down.
The value 0 indicates feature off and the values 0.7s / 1.0s / 1.4s / 2.0s / 2.8s / 4.0s / 5.7s indicate switch off times.

Dim to Dark

The “DIM to Dark” feature is used to change the lower dimming limit of an driver. If disabled, the driver can dim down to the “rated minimum dim level”, which is typically 1%. If enabled, the driver shall dim further down to the minimum technically possible dim level. This is either the minimum

dimming current or the smallest DALI value 1 which equals 0,1%. The T4T software has an option to enable/disable the DIM to Dark feature and adapt the Dim Level limits, already present in the visualization of all other dimming features accordingly.
Depending on the driver used, different lowest dimming levels can be achieved. Please refer to the documentation of the used driver for specific information.

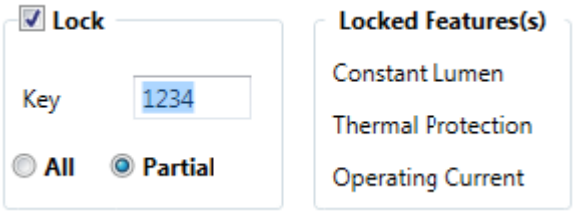


Dimming below 1% Dimming below 1% enables steady dimming down to the final switch-off of the device. This feature is suitable for theaters, movie theaters or other special applications. For LED drivers with pure amplitude dimming, the minimal dimming value in percent is determined by the ratio of minimal output current to rated current.
Dimming below 10% Dimming below 10% allows to reach lower illuminances in the dimmed state. For LED drivers with pure amplitude dimming, the minimal dimming value in percent is determined by the ratio of minimal output current to rated current.
Please note that the physical min level (DALI PHY MIN) will be adjusted as soon as the "operating current" is modified or in case of the LEDset Mode, after Start-up phase of the device and if the value has changed more than +/-3.1% to the previous one.

OEM Key

This feature enables luminaire manufacturers (OEMs) to safeguard certain predefined setting parameters (e.g. the safety relevant features) in the LED driver against unintentional access and not authorized users. The features, that can be protected, are shown in the ***Lockable Feature(s)*** box.

Some drivers have also the possibility to lock the driver completely or only partially. The locked features are listed in the box "Locked Feature(s):



The locking of these features can be activated by enabling the check box ***Lock***. To lock the driver a four digits ***Code (former PIN)*** needs to be entered.
The allowed codes are all numbers in the range 0001-9999 (the Code 0000 is reserved to indicate that the driver is not locked). In the example above the user input the code 1234.
Please note that in new generation drivers, the OEM key has been replaced by the Configuration Lock protection system (see below).

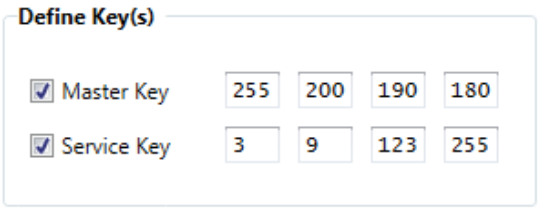
Configuration Lock

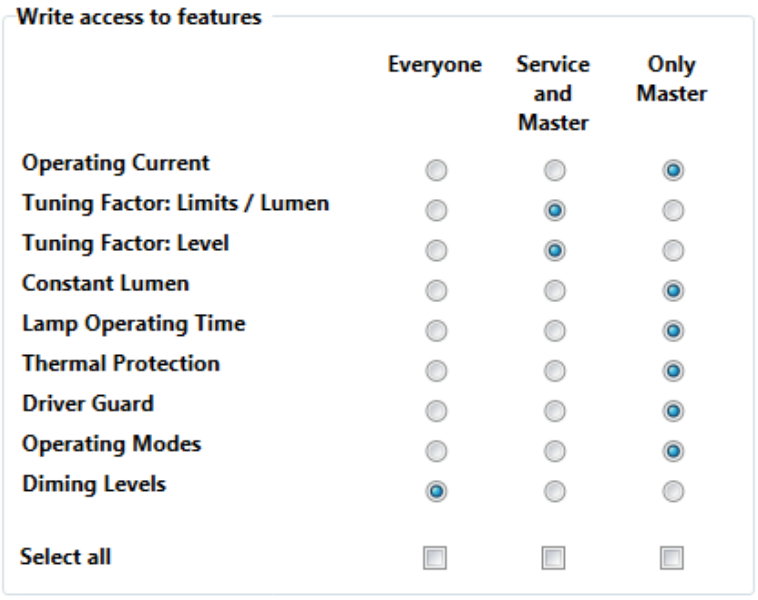
The Configuration Lock is a new multi-level password protection designed to protect drivers against unauthorized changes which could lead to serious safety problems.
This feature is an advancement of the old feature "OEM Key", which allows protecting individual features of the LED driver.
This new system allows to assign different level rights e.g. to the luminaire manufacturer, to the service team and to the general user. Assigning user rights also allows offering "light as a service" and still maintaining total control over who may change what within the device or luminaire.

By enabling and setting up a Master Key in the driver, the driver can be locked to avoid any changes by anyone that can access the driver. Only people that know the Master Key are able to modify the driver settings. In addition, a Service Key can be set up to allow an additional user group to modify certain driver settings without having to hand out the Master Key. A Service Key can only be set if there is a Master Key available. The Service Key feature requires a license key to be activated. There is also the possibility to give write access to everyone.

For each key, the user has to enter 4 numbers (and each number can have a value from 0 to 255) to set it up.

The features that can be protected are shown in the ***Write access to features.***

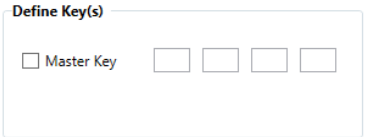


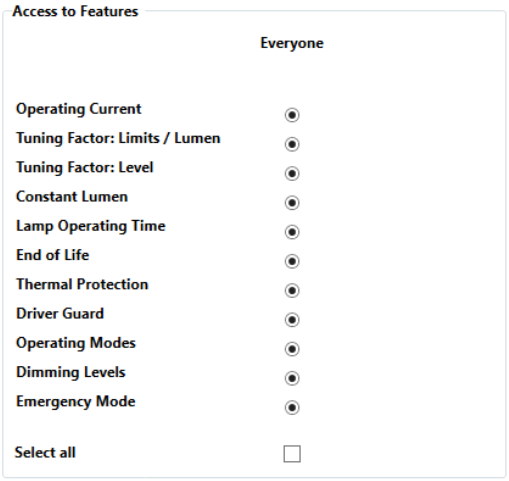


IMPORTANT NOTE: After programming a driver with a Master or Service Key you need to power-on the driver once!
Not powering on the driver after the programming does not protect the drivers and allows to reprogram the drivers without a password!

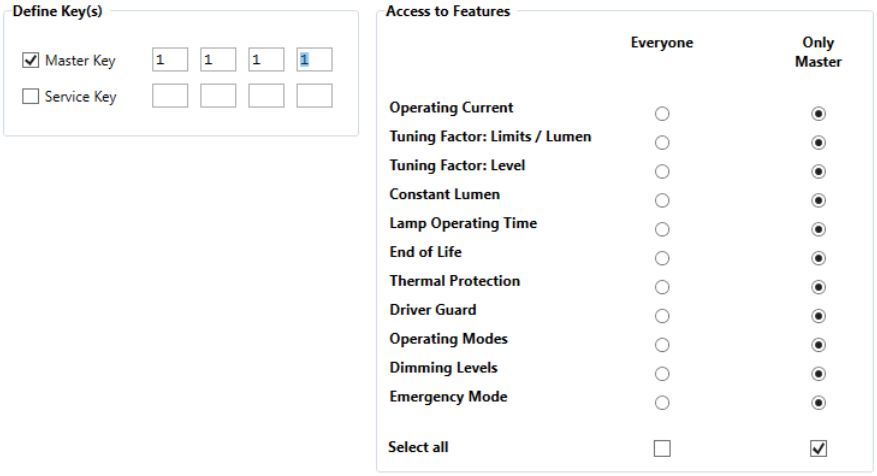
Setting keys and permissions enable a controlled use of the T4T Field app. Following five configurations are possible:

1. **No password protection**
   Anybody can download the Tuner4TRONIC Field app and modify the Light Output and Dimming Settings of the LED driver.

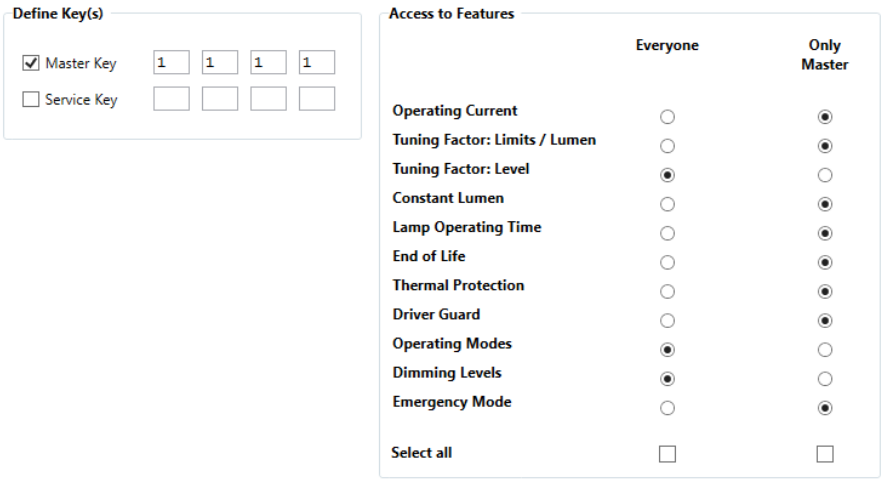




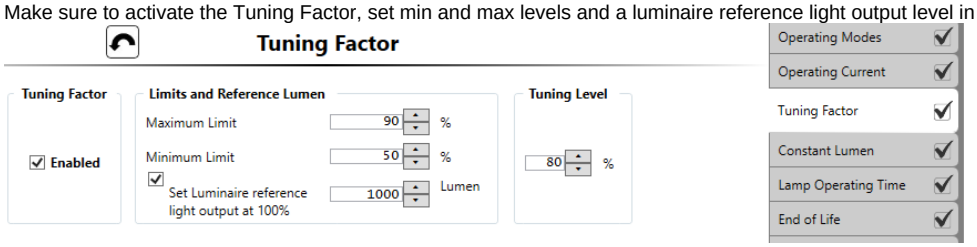
2. **Master Key protection, no modifications allowed**
   You can set a Master Key and prohibit any modification of LED driver settings with the T4T Field app.



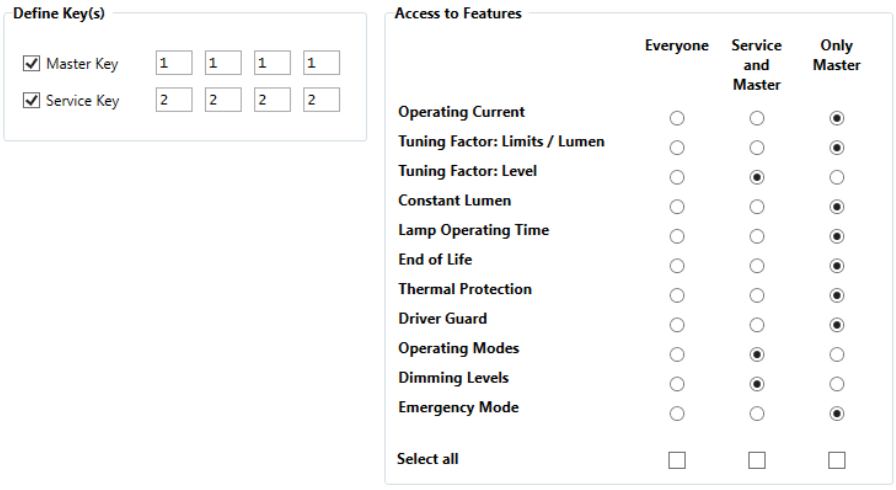
3. **Master Key protection, controlled modifications allowed**
   You can set a Master Key and allow any Tuner4TRONIC Field app users to change the Light output within predefined levels and change the dimming levels.
   The Tuning Factor: Level corresponds the Light Output feature on the Field app. The Dimming Levels correspond the AstroDIM times and levels. Operating Modes allows to turn AstroDIM on and off.



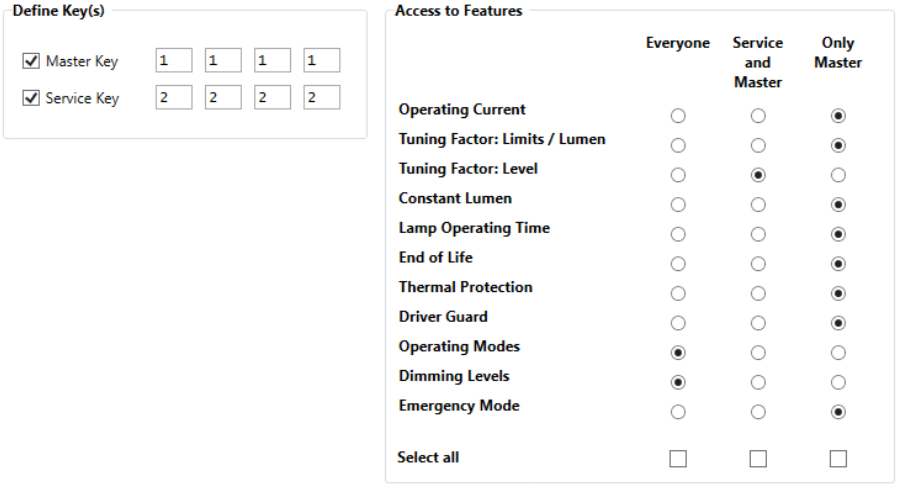
   Make sure to activate the Tuning Factor, set min and max levels and a luminaire reference light output level in lumen!



4. **Master key protection, controlled modifications allowed with Service Key protection**
   You can set a Master Key and allow only Tuner4TRONIC Field app users that get the Service Key from you to change the Light output within predefined levels and change the dimming levels.

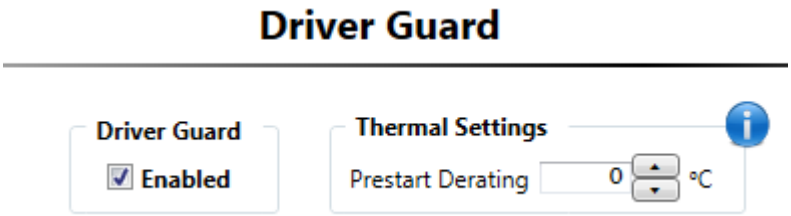


5. **Mix of 3 and 4**
   You can also mix the permissions. In this example everyone could change the dimming levels without entering a password in the Field app, but only after entering the Driver's Service Key the T4T Field app user could change the Light Output.



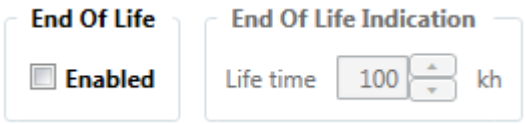
Driver Guard

By default, the internal safety mechanisms of the LED driver are designed for maximum temperature, however, not for those of the luminaire. By means of this feature, you can adjust the temperature derating of the LED driver so that it not only matches the luminaire, but also leads to a higher reliability of the luminaire. The thermal performance of an electronic control gear (driver) impacts its lifetime and cost. The LED technology creates a demand of flexible driver (window driver) regarding power and operating conditions. In seldom cases, the driver is operated at its maximum and therefore the thermal performance is not optimized to the system and application.When enabled, the "Prestart Derating" provides an offset to the maximum allowed temperature of the driver.



End Of Life

By means of the connected LED module, the LED driver can visualize that the preprogrammed lifetime of the connected LED module is reached and the LED module should be replaced. This feature allows indicating the guaranteed lifespan of the lamp or the whole system in case the lamp is not exchanged. The **End Of Life** indication is reference to the lamp operating time.



This feature can be selected by the ***Enabled*** check box.
The end of ***life time*** range is between 0 and 254kh. The way of indication will differ according to the Driver type. For further information please consult the Driver specific technical description.

Lamp Operating Time

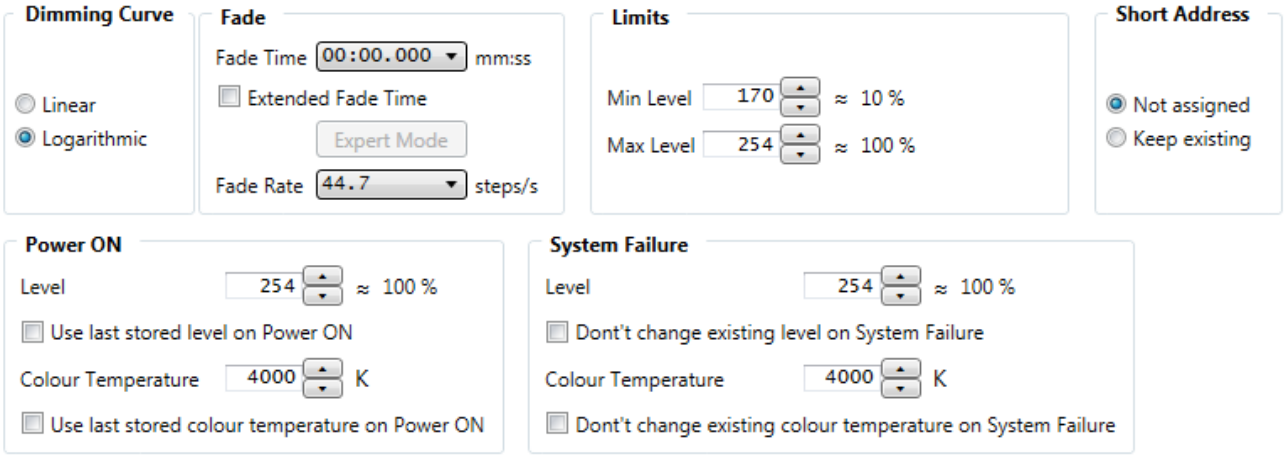
This feature allows to set and reset the *lamp operating time*.The current value of the lamp operating time is used for the constant lumen output function. In case of a lamp replacement the *constant lumen* and also the *End of Life* function could be reset, if those features are supported by the control gear.



The ***Lamp Operating Time*** can be set between 0 – 254kh.

DALI/DEXAL Settings

In DALI mode, the driver can be controlled by an application controller via the bidirectional DALI interface and it supports status request queries. Through the DALI application controller, the driver can be integrated into a light management system. DALI version-1 drivers support stepless dimming, status requests, and addressing of each individual light point.



Dimming Curve: set the dimming behavior of the output level with respect to the dimming value.
Fade: set the fade time and rate associated to the related DALI commands.

In case DALI or DEXAL settings (e.g. fade times) have been adapted by other tool or device, it could happen that Tuner4TRONIC does not recognize them and shows an error. Only by reprogramming the driver in T4T with a complete new programming file makes the warning disappear .

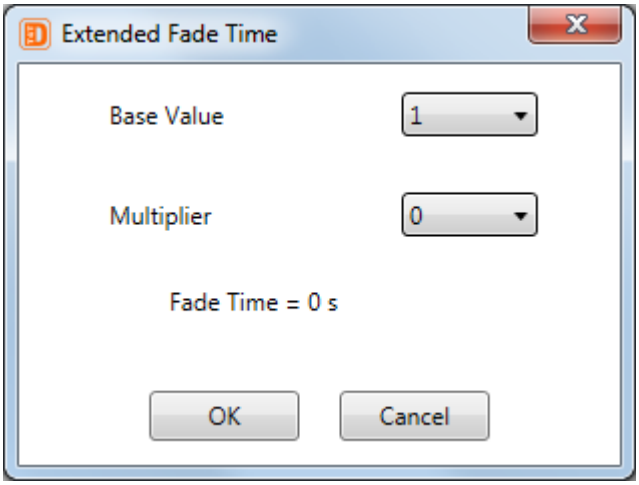
Limits: Min Level – Max Level is the allowed output range when dimming up and down.

Power ON Level is the output level set when the mains voltage is supplied to the driver.

System Failure Level is the output level when DALI line is disconnected or malfunctioning.

Short Address: Enables a possibility to reset or keep DALI addresses in case of single Driver programming (default setting = reset). For multiple programming all DALI addresses will be reset.
A warning icon on the group box with a tooltip "Cannot keep the DALI address if the programming setup is multiple luminaire" will indicate this information when the "Keep existing" option is selected.

DALI-2
For Drivers that support DALI-2, there is a possibility to select either Standard fade time or Extended fade time. By default standard fade time will be selected. By checking the extended fade time checkbox, extended fade time value can be selected. On click of the "Expert mode" button, the below dialog is displayed, which will enable the user to select a dedicated base value and a multiplier value and hence sets the extended fade time value.

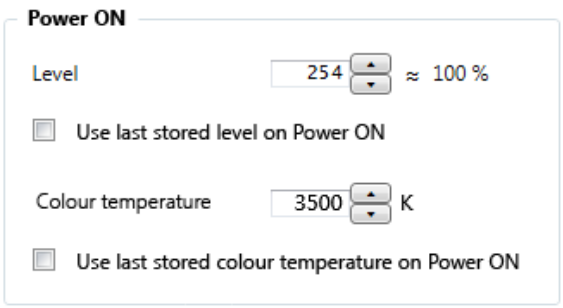


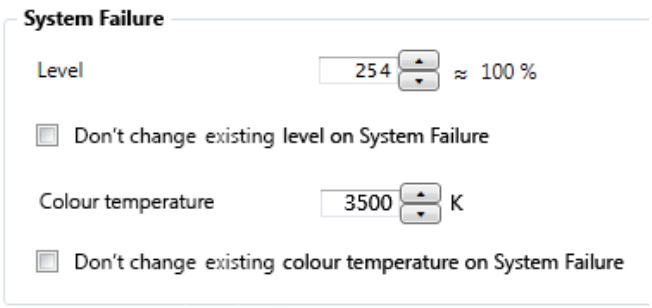
Note about mismatch in DALI Min Level

According to the DALI standard, a device must not reply a DALI Min Level below the Physical Min Level.
If the DALI min Level has been programmed at a lower level, then a higher Physical Min Level temporary caps the programmed DALI Min Level.
The Physical Min Level may be higher if no LEDset resistor is connected and will become lower when the resistor gets connected.
Thus reading the DALI min level only reflects the momentary state of the driver, but it may change after deploying the driver in the luminaire.
If the DALI Min Level was accidentally set below Physical Min Level, please note that device cannot dim down to the desired level!

Additional DALI Settings for LED Drivers supporting Tunable White

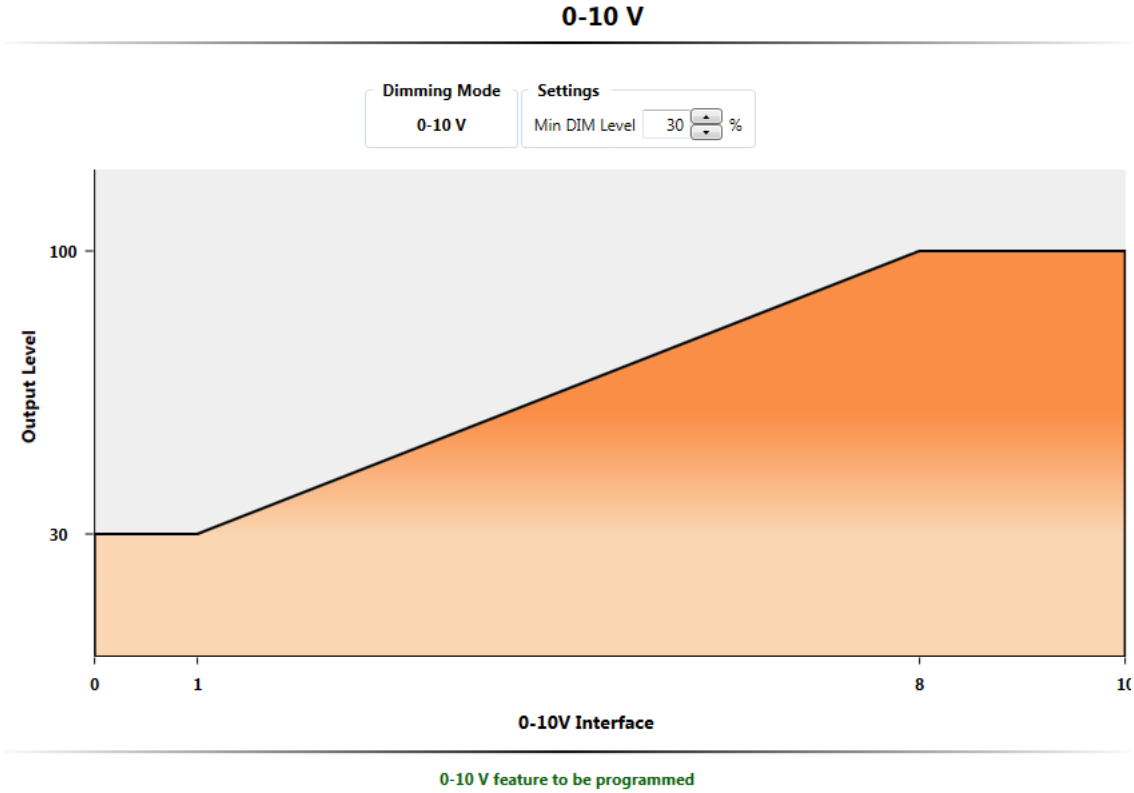
LED drivers supporting Tunable White offer the possibility to define the colour temperatures when the driver is powered on and to keep the existing colour temperature in case of a system failure.
For Power On it is possible to set a fixed colour temperature or to use the last stored colour temperature. For System Failure Level a fixed colour temperature can be defined or no change of colour temperature can be selected.





0-10V Settings

Drivers with a 0-10 V Interface can be integrated into light management systems. These unidirectional interface allows adjusting the light output of the system, adjusting the dimming behavior via the 0-10V control port.



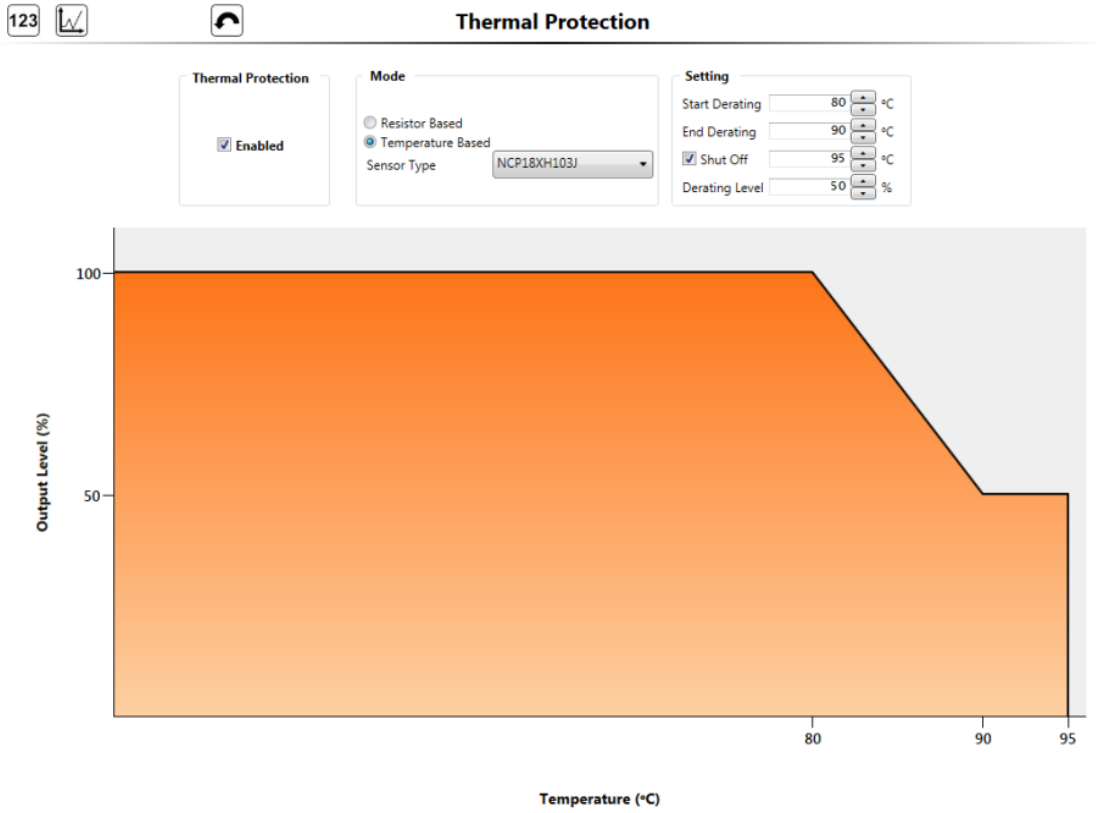
Min DIM Level: set the dimming level for an input voltage below 1V.

Thermal Protection

This feature allows to adjust the thermal management of the LED module or of a complete luminaire for high ambient temperatures by controlling the output level based on the temperature/resistor value measured at an external sensor (e.g. NTC, negative temperature coefficient resistor) connected to the driver. There are two modes for thermal protection:

1) Resistor Based
2) Temperature Based

(not applicable for all control gears with thermal protection feature)
Either of those can be selected, depending on the control gear type.



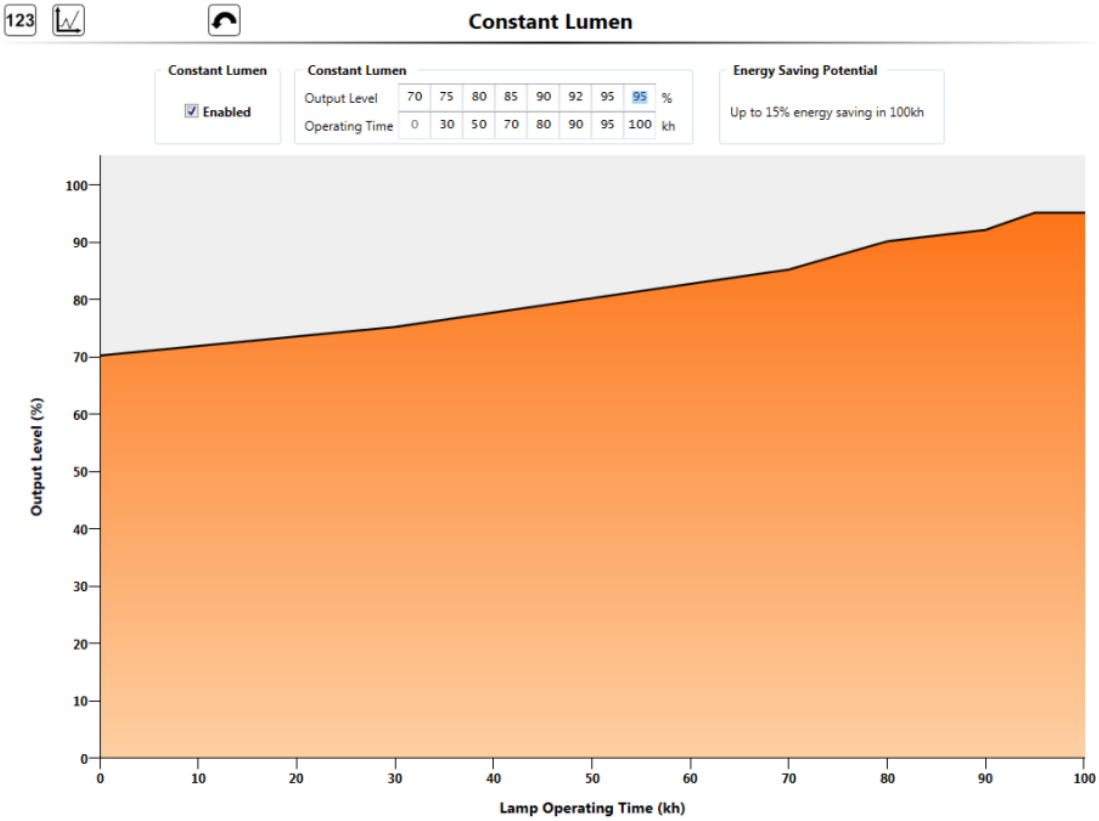
This feature can be switched on by the ***Enabled*** check box.
The desired thermal protection mode, either ***resistor based*** or ***temperature based*** needs to be selected if supported by the Driver. In case of temperature based mode also the **sensor type** has to be defined. The predefined sensor types are typically used NTCs.
In **Settings** group box the following parameters can be set:

- **Start Derating**: This parameter (°C, Ohm) defines the start point for derating the output level
- **End Derating**: This parameter (°C, Ohm) defines the end point for derating the output level
- **Shut Off:** If the control gear supports a complete switch off the shut off point can be defined. In case the *Shut Off* is not enabled the control gear will not switch off.
  For control gears not supporting a switch off, the *Shut Off* check box is disabled and not editable.
- **Derating Level**: This parameter defines the output level at the end derating point until shut off, if supported.

Note: The derating level between the start and end derating point could vary to the derating line, which is displayed in the software.
For further information please consult the device specific technical description.

Constant Lumen

To ensure the maintenance interval of the system, the light level must be achieved also at the end of the entire lifetime. Due to lumen depreciation of the light source over time, the system usually needs to be overpowered at the beginning, which leads to increased energy cost. This is not necessary thanks to the constant lumen function, as the operating output is adjusted continuously to compensate for the lumen loss. A *schedule* needs to be created that continuously increases the *output level* of the lamp. Reliable lifetime data of the lamp / LED module is necessary for best performance of this function.



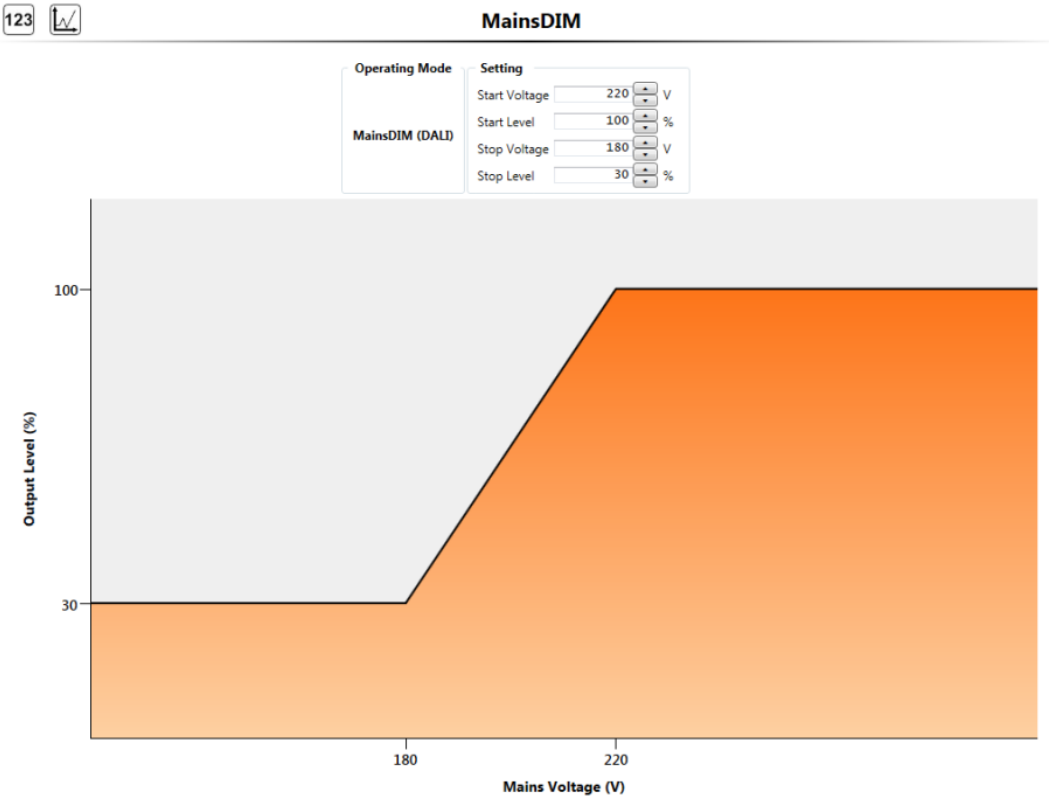
This feature can be switched on by the ***Enabled*** check box.
The custom **schedule** is defined by the following parameters:

- **Operating Time**: The value range is between 0 and 254 kh. The values needs to be continuously increasing from the first to last data set
- **Output level**: The value range of the output level is depending on the driver type. The values needs to be continuously increasing from the first to last data set or at least equal

Depending on the driver type the number of the data sets of the ***schedule*** can vary. The maximum number is 8. For some drivers it is necessary to fill in the complete table.
In the graph the actual lamp operating time is indicated as a vertical dotted line (not applicable for certain gear types)
By pressing the **Savings** button the approximate energy savings is calculated until the last entered operating time value. The result appears in a separate **Energy Saving Potential (Constant Lumen)** dialog box.

MainsDIM

This dimming method is mainly used in combination with magnetic ballasts for existing street light installations. The light output is reduced by lowering the mains voltage. The reduction of the mains voltage is carried out by a controller in the distribution cabinet. This functionalities allow to reproduce this behavior also for electronic control gears.



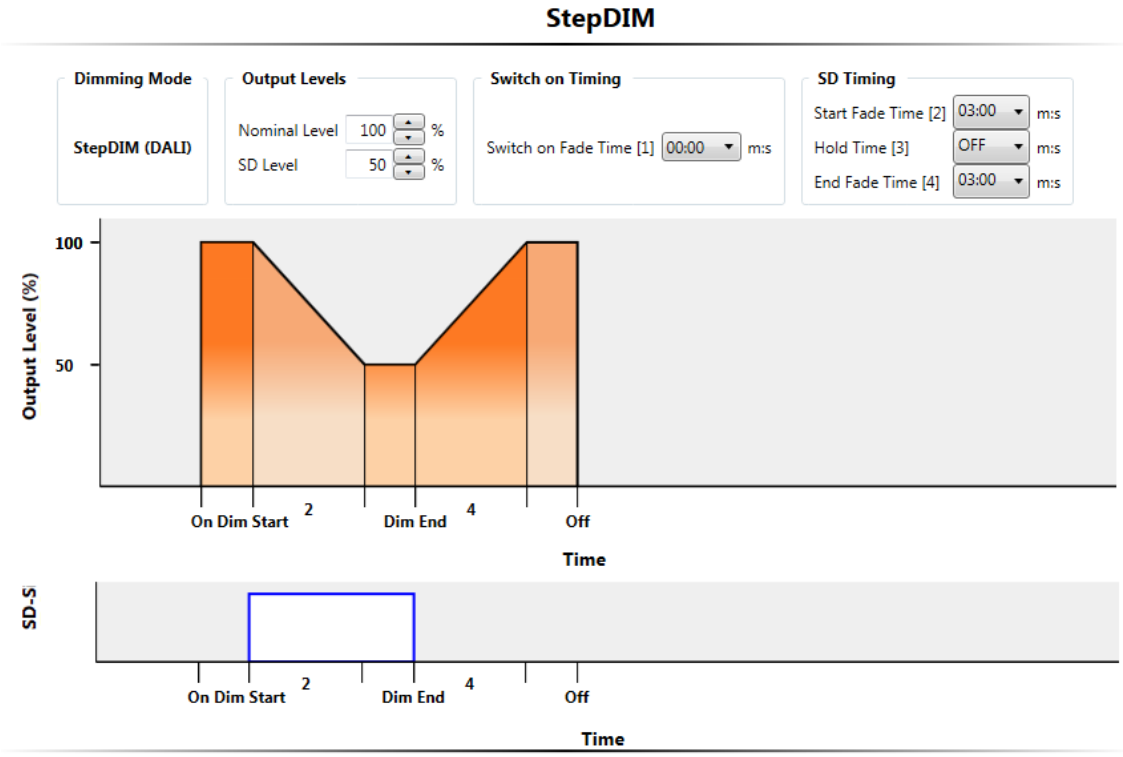
This feature can be selected by the ***Operating Mode*** feature tab.
The dimming characteristics can be defined by the following four parameters:

- **Start Voltage**: This parameter defines the start point for derating the output level
- **Start Leve**l: This parameter defines the output level until the start point of derating
- **Stop Voltage**: This parameter defines the end point for derating the output level
- **Stop Level**: This parameter defines the output level after the end point of derating

For further information please consult the device specific technical description.

StepDIM

The StepDIM (bi-power) mode allows switching between two output levels, the "normal" mode and the "reduced load" mode, by means of an additional switched phase or the control via an external sensor (like presence detection sensor or photocells). In the "reduced load" mode, the driver reduces the lighting level and therefore the energy consumption. The light levels can be preprogrammed flexibly.). In the ***Operating Mode*** feature tab the option StepDIM, StepDIM inverse (polarity of the SD signal) or StepDIM Inverse, Autodetect needs to be chosen. The selected mode is shown in the Dimming Mode group box.



StepDIM feature to be programmed

This feature can be selected by the ***Operating Mode Mode Feature*** *tab*.
The dimming characteristics can be defined by the following six parameters:

- **Nominal Level/(Power on Level):** This parameter defines the output level when the SD port is not triggered.(StepDIM) / triggered (StepDIM inverse)
- **SD Level/(Dim Level 1):** This parameter defines the *output leve*l when the SD port is triggered. (StepDIM) / not triggered (StepDIM inverse)
- **Switch on Fade Time:** This parameter allows the adjustment of the *fade time* at power on (not applicable for certain gear types)
- **Start Fade Time/(DIM Fade Time)**: This parameter defines the *fade time* after the SD port is triggered (StepDIM)/not triggered (StepDIM inverse) (not applicable for certain gear types)
- **Hold Time**: This parameter defines the *hold time* after the SD port is not triggered (StepDIM)/triggered (StepDIM inverse) (not applicable for certain gear types)
- **End Fade Time/(DIM Fade Time)**: This parameter defines the *fade time* after the hold period (not applicable for certain gear types).

For further information, please consult the device specific technical description.

AstroDIM

This feature provides multi-stage night-time power reduction based on an internal timer referenced to the power ON/OFF time. There is no need for an external control infrastructure. The LED driver automatically performs the dimming profile based on thepredefined scheduled reference to the midpoint, which is calculated based on the power ON/OFF times (no internal real-time clock). Two modes are available:

- **Time Based** (not applicable for certain gear types)**:**

If the *Time Based Mode* is selected the dimming profile can be adjusted in the ***Reference Schedule*** based on the switch on point of the mains.
In this mode the *Switch off Fade Time* is not selectable.

- **Astro Based:**

In this mode the dimming profile is executed referenced to the half operating on time of the driver. It is assumed that there is a correlation between the half operating on time (virtual middle of the night) and midnight, expressed by the midnight shift.



The virtual middle of the night is calculated based on the theoretical sunset (Power on) sunrise (Power off) and the ***Time Zone*** depending on the selected ***Location***. It is assumed that the driver is powered-on at the theoretical sunset and powered-off at the theoretical sunrise. The average annual midnight shift is used to convert the time steps of the reference scheduler to time values reference to the half one time.
Certain predefined locations can be selected by the ***Location*** drop down menu and also custom locations can be defined by clicking on the **world symbol**. In the ***Reference Schedule*** the output level as well as the time for each dimming step can be given for up to five dimming levels (steps).
When working with Locations, please make sure to select a location from the menu first and then edit the Reference Schedule. Working the other way around (first editing the Reference Schedule and then a Location) will reset the parameters of the Reference Schedule.



The **Schedule** group shows the dimming profile for a specific day, when ***Sunrise/Sunset based*** is selected. The values are only valid within a certain tolerance, if the driver is powered on at the time step1 and powered off at time step 6 at this date.

Some countries use the daylight saving time. If this needs to be considered in the visualization of the graph and the schedule, the check box ***Show Daylight Saving*** needs to be enabled. Note that the control gear cannot compensate the time shift related to the daylight saving time.
In addition it is possible to enter custom switch on and off times by selecting the ***Manual*** option.

Note: If switch on and off times are entered manually, these values are only used to calculate the estimated dimming behavior of the Driver if it is powered on/off at these times. The device does not switch on and off by itself.

The **Energy savings** information is only visible in *Astro Based* mode. The approximate energy savings will be indicated with the assumption that the real switch on and off time match with the calculated sunset and sunrise times. The result is shown in a separate **Energy Saving Potential (AstroDIM)** dialog box.
The fade time characteristics can be defined by the following three parameters:

- **Switch on Fade Time:** This parameter defines the *fade time* at power on. (not applicable for certain gear types)
- **Astro Fade Time / (DIM Fade Time)**: This parameter defines the *fade time* between the different output levels. There are different ranges and levels allowed for the various types of control gear.
- **Switch off Fade Time:** This parameter defines the fade time for the switch off (not applicable for certain gear types).

Depending on the selected control gear, the available parameters will appear as active. For further information please consult the device specific technical description.

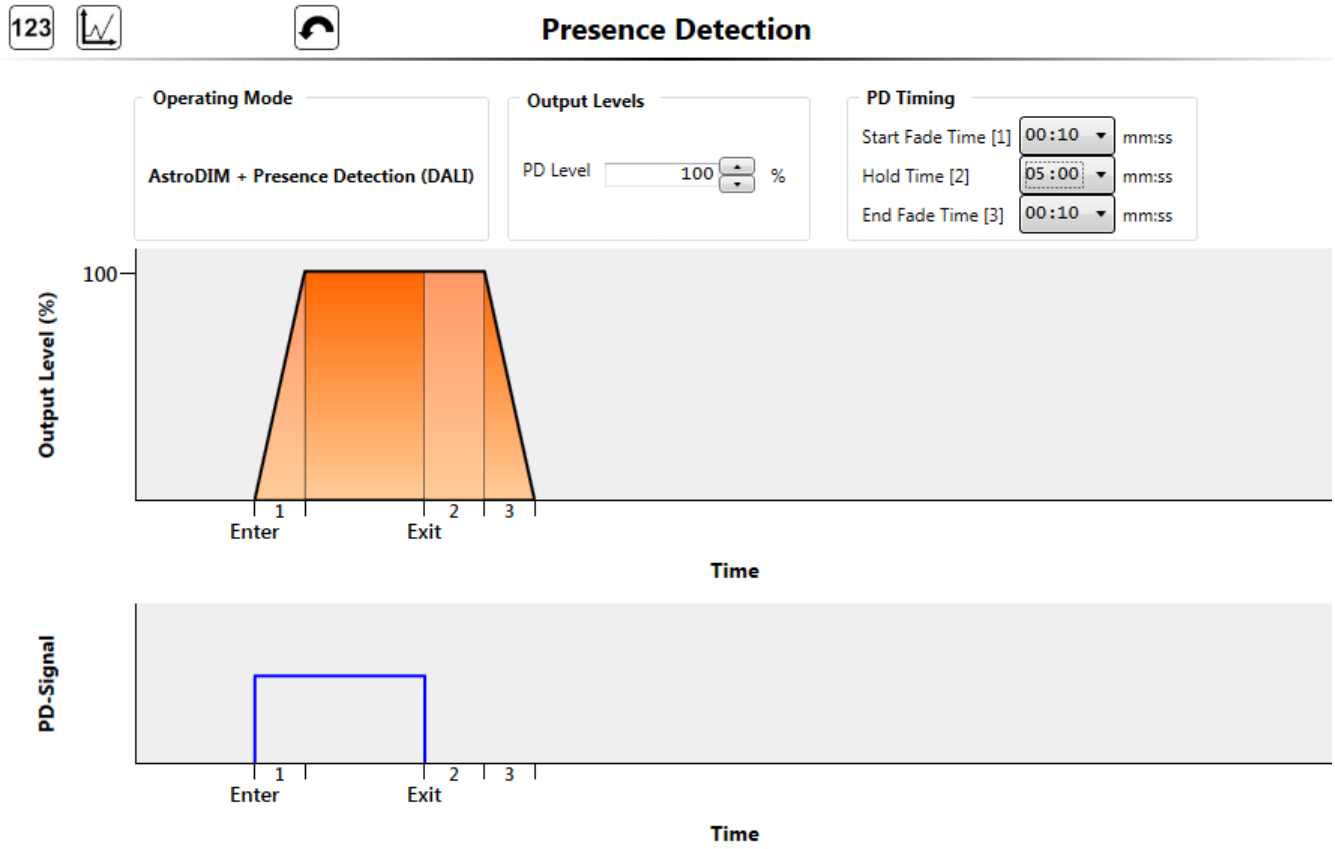
Note: When switching between **Time Based** and **Astro Based** or vice versa the Reference Schedule will be reset to default.

- **SD triggered:**

In this mode, the start of the dimming profile is triggered by the SD Port (Half night Switch). This ensures that the luminaires can be dimmed at the same time triggered by an external clock timer using the SD interface and are not affected by the time shift during the year in the standard "AstroDIM based" feature.

Presence Detection

In the AstroDIM mode, this feature allows to adjust the output light level to the activity around each light point with an additional external sensor connected to the SD port and powered by the mains, regardless of the actual dimming level of the AstroDIM mode. The presence detection profile has a higher priority than the output level defined by another dimming mode during presence detection (except for DALI).



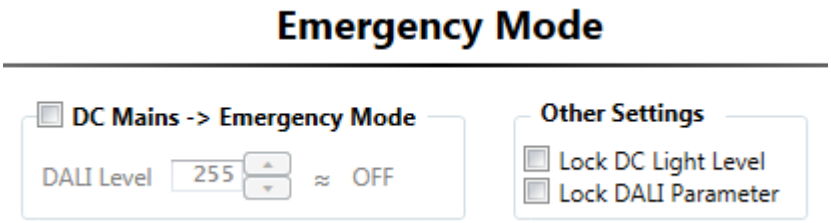
This feature could be selected by the ***Operating Mode*** feature *tab*.
The dimming profile can be defined by the following four parameters:

- **PD Level:** This parameter defines the *output level* when the SD port is triggered.
- **Start Fade Time**: This parameter defines the *fade time* after the SD port is triggered
- **Hold Time**: This parameter defines the *hold time* after the SD port is deactivated
- **End Fade Time**: This parameter defines the *fade time* after the hold period

For further information please consult the device specific technical description.

Emergency Mode

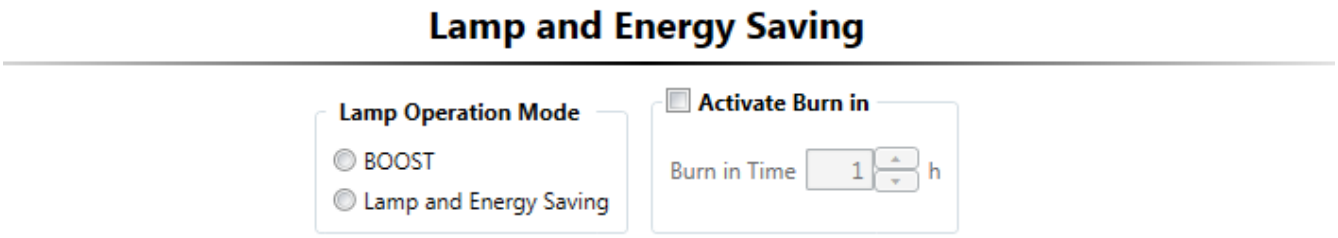
In addition to DALI-compliant functions, such as system failure level (disconnecting the control line), OSRAM DALI LED drivers with this feature offer the automatic detection of DC voltage supply. When DC voltage is detected, a preprogrammed luminous flux level between 0 and 100 % is implemented. Typically, the factory setting for indoor LED drivers is 15 %. This luminous flux value can be additionally protected from unintentional overwriting by setting a locking bit.



DC mains -> Emergency Mode: enables the driver to activate the Emergency operation when a DC supply voltage is detected and consequently switches to the related **Output Level**.
Refer to the driver's technical documentation to see which further features are affected by the Emergency operation.
Other Settings:
Lock DC Light Level: enable this option to avoid that the Output Level (input in the DC mains -> Emergency Mode field) is changed in application by the DALI controller.
Lock DALI Parameter: enable this options avoid that any standard DALI parameter could be changed by a controller.
A warning icon on the group box shows the tooltip: "Locked DALI parameters may cause problems with control devices.".

Note: Drivers which have this feature setting capability are not always compliant by default for emergency application. The functionality could be limited for pure DC grid environment. Please consult the Driver specific technical description.

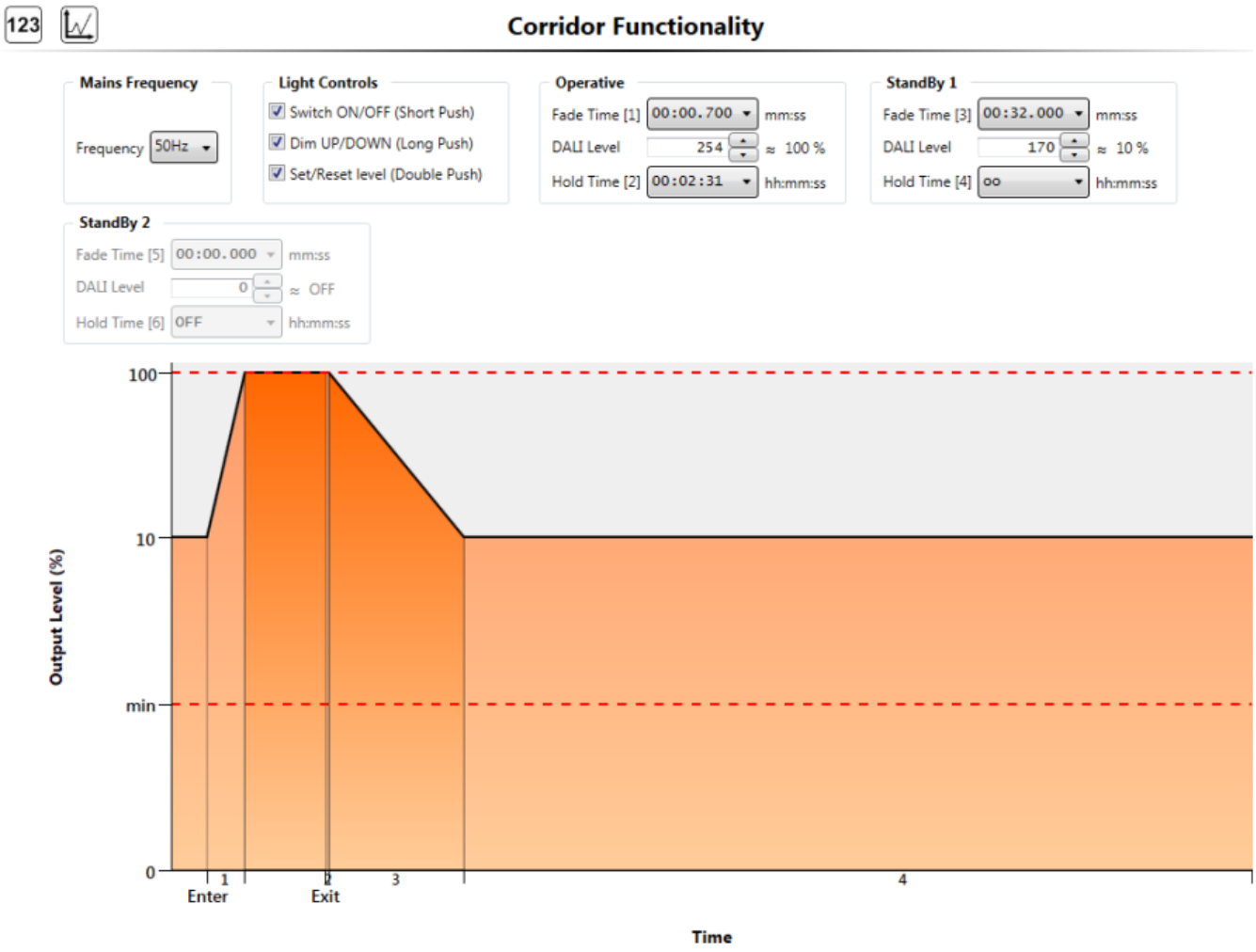
Lamp and Energy Saving



Lamp Operation Mode: for Quicktronic Drivers, select the lamp type here.
Activate Burn in: for Quicktronic drivers, enable this option to perform the burn-in process of the fluorescent lamps. The duration of the burn-in process is defined by the **Burn in Time** field.
Refer to the driver's technical documentation for further details.

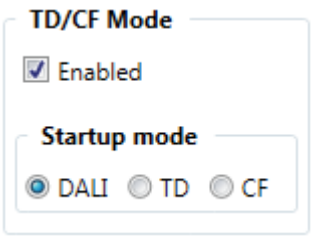
Corridor Functionality

The Corridor Function available for OSRAM DALI LED drivers allows the configuration of a lighting profile over up to two levels without the need of an external controller. This defines the extent to which brightness values are retained when a person leaves the room. The brightness values and levels can be modified at any time using Tuner4TRONIC. A typical area of application is the illumination of stairwells, corridors, service rooms, rest rooms, etc.



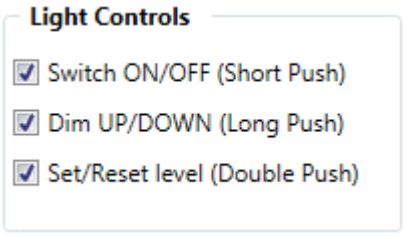
Red dotted lines: MAX / min light levels as per DALI setting

Choose the installation ***Mains Frequency*** for proper operation of the TouchDIM and Corridor Functionality;



Choose the Start Up mode of the Driver when powered.

Note: For DALI installation, to avoid involuntary switching to TD/CF mode (e.g.due to mains disturbances) unselect the TouchDIM / Corridor Functionality (TD/CF) checkbox.



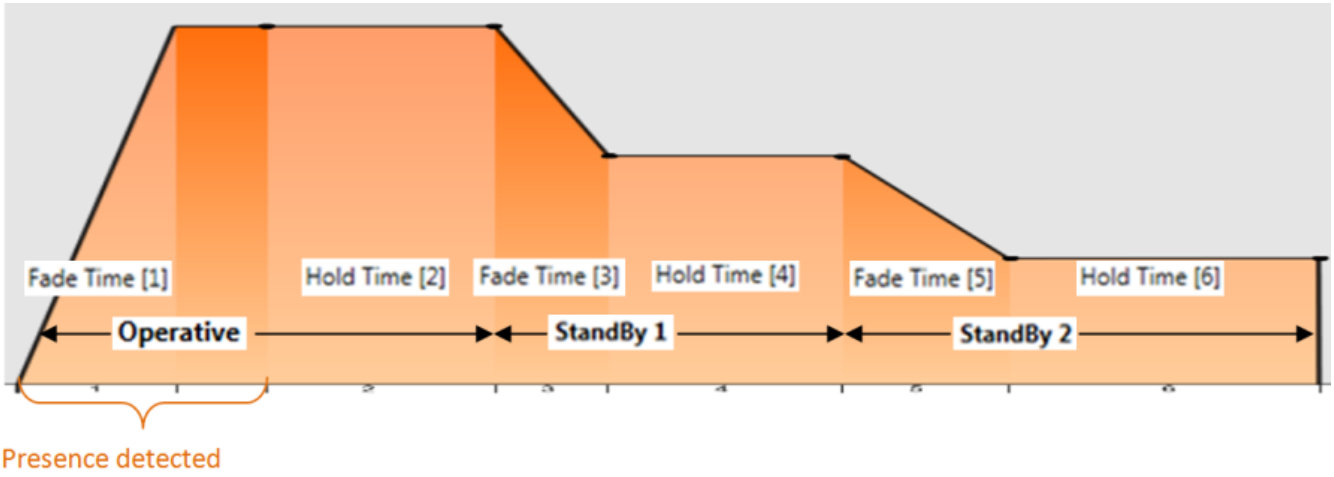
Select which event(s) will start the sequence;
With push buttons select Short Push at least.
With PIR sensor select Short Push and Long Push at least.

The light output profile over time is divided into three sections:

- **Operative:** When presence is detected by the PIR or push button.
- **StandBy 1:** When the hold time of Operative is elapsed
- **StandBy 2:** When the hold time of StandBy 1 is elapsed

A new cycle is started every time the enabled triggering event occurs (PIR detects presence or push button is pressed), even if a previous cycle is still running.





For each section:

- ***Fade Time*** is the transition time between the selected light Output Level of each sections
- **Output Level** is the light output delivered by the driver, expressed in % of the maximum current or DALI value according to the selected Display Unit.
- ***Hold Time*** is the time duration of the section, excluding the fade time.

The number in the square brackets [n] refers to the related part of the chart.

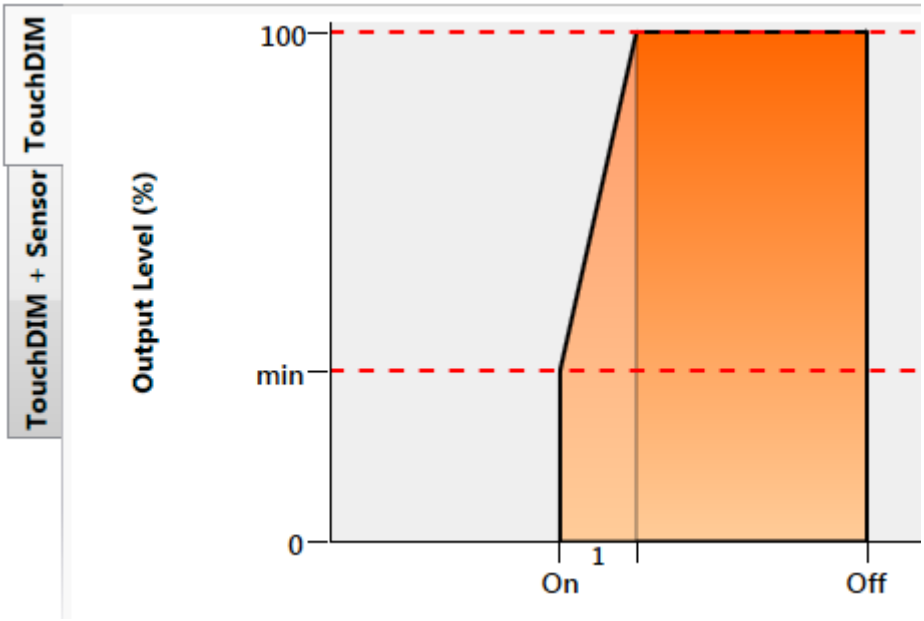
Refer to the driver's technical documentation for further details.

TouchDIM + Sensor

In addition to the DALI feature, some OSRAM DALI LED drivers support TouchDIM operation. With TouchDIM, standard pushbuttons (suitable for mains power) can be used to switch on/ff and dim the lighting and save a desired brightness value. A maximum of up to 20 LED drivers is supported.

Presence- and daylight-dependent lighting control can be implemented simply by using Touch DIM LS/PD LI sensors in combination with up to four DALI LED drivers. The desired brightness values can be saved by double-clicking a standard pushbutton. An automatic standby switch-off can be configured to respond to suficient daylight.

Charts: there are two charts available, to display the situation with or without the sensor

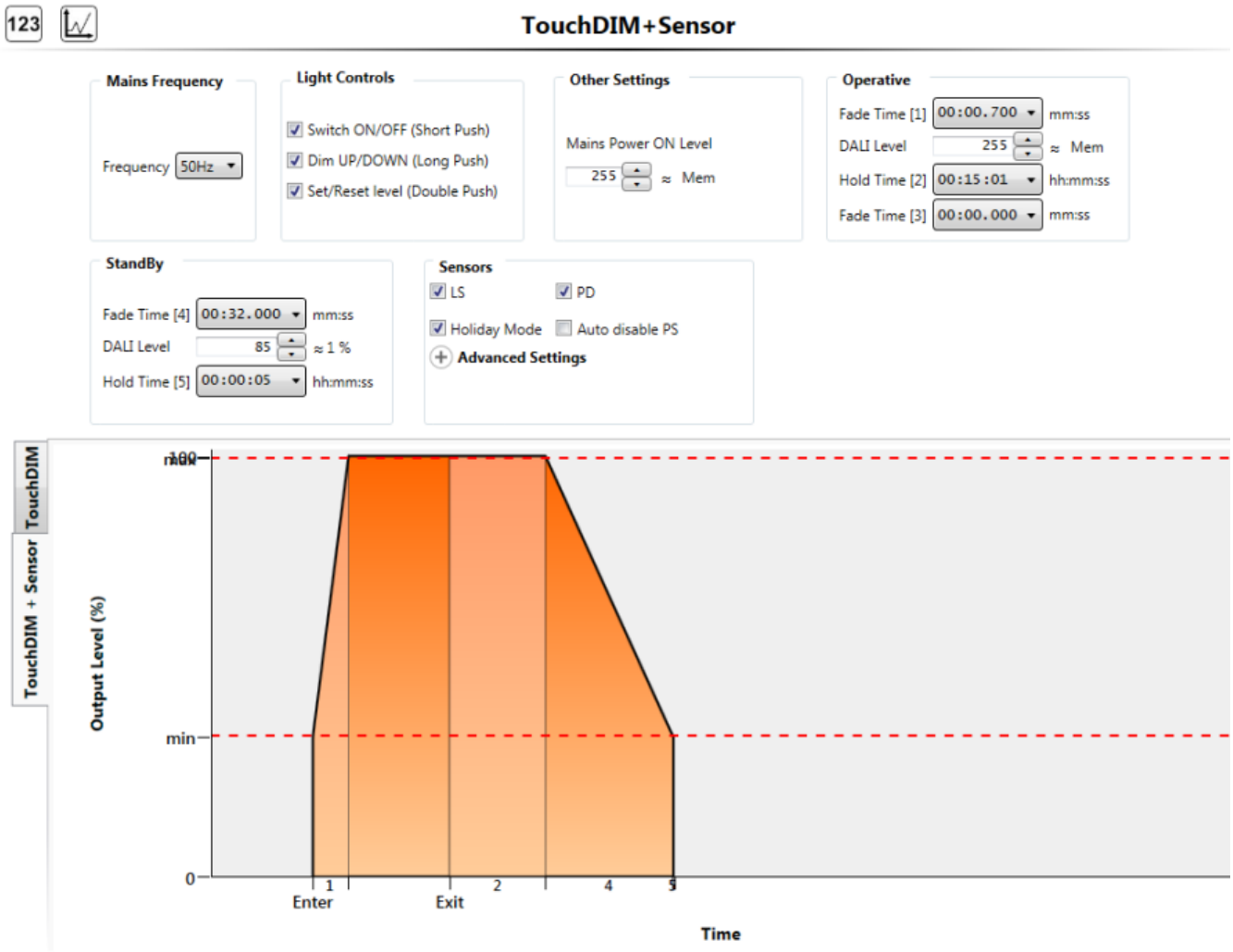


TouchDIM: display the behavior of the Driver when only the push buttons are used, without LSPD sensors.

Note: without a sensor connected, the Standby and Sensor settings can be programmed, but they will be ignored until a sensor is connected.

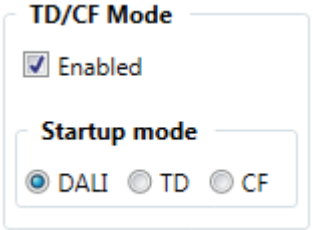
TouchDIM + Sensor: display the behavior of the Driver in case an LSPD sensor will be connected.

Settings:

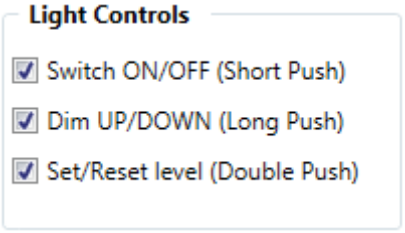


The red dotted lines show the DALI max and DALI min light levels as per DALI setting.

Chose the installation ***Mains Frequency*** for proper operation of the TouchDIM and Corridor Functionality;

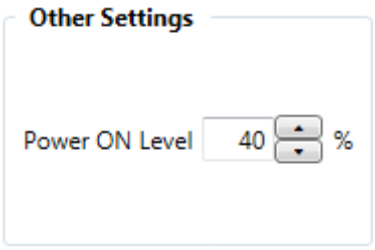


Set the operating mode of the driver when powered on after programming. Don't enable TouchDIM / Corridor Functionality (TD/CF) to improve DALI line immunity vs. mains disturbs in case the only intended use will be DALI.



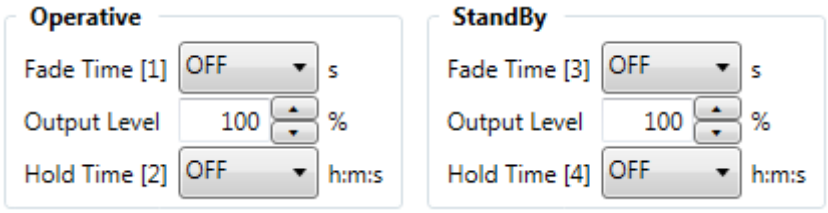
Select which controls will be enabled.
OSRAM recommends leaving all events enabled when the TouchDIM sensor is connected to the Driver(s).

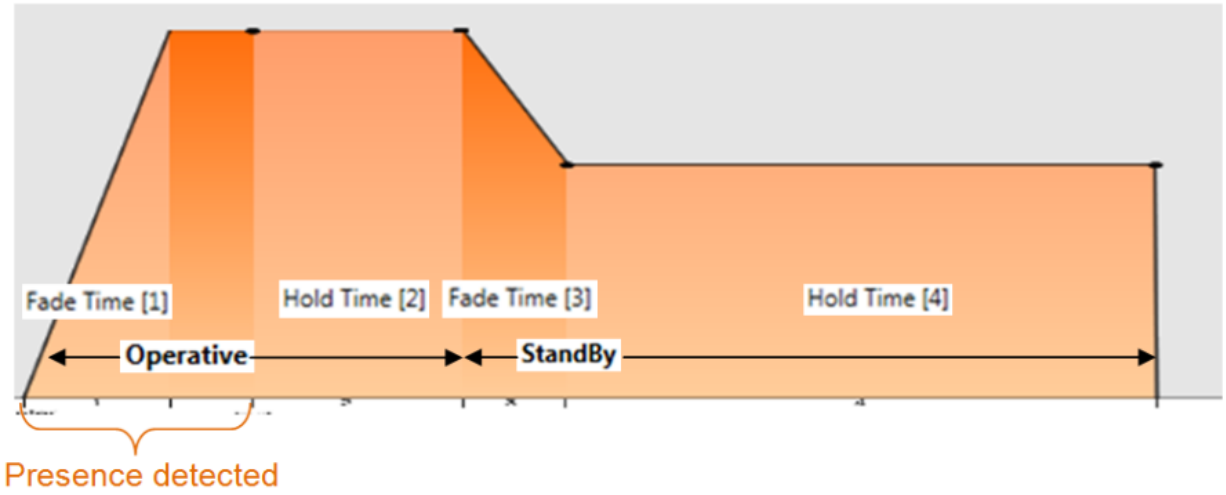
Refer to the TouchDIM Sensor's technical documentation for details.



Power ON Level is the output level of the driver right after the mains voltage is supplied.

Drivers with simple TouchDIM functionality (without Sensor) don't support the following features; in this case they will be displayed in shading gray.
The light output profile over time is divided into two sections:
Operative: When presence is detected by the TouchDIM Sensor or (short) push button.
StandBy: When the hold time of Operative is elapsed
A new cycle is started every time the enabled triggering event occurs (PIR detects presence or push button is pressed), even if a previous cycle is still running.

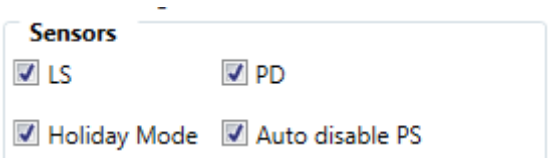




For each sections:

- ***Fade Time*** is the transition time between the selected light Output Level of each sections
- **Output Level** is the light output delivered by the driver, expressed in % of the maximum current or DALI value.
- ***Hold Time*** is the time duration of the section, excluding the fade time.

Sensor settings:



Light Sensor (LS): Enable/disable the light sensing; if enabled, user can enter the time frame (Time Constant) used by the sensor to measure and average the light value.
Presence Detection (PD): Enable/disable the presence sensing; if enabled then also the **Holiday Mode** feature can be enabled/disable.
Auto Disable Presence Sensor: if enabled, this feature will disable the presence sensing after having switched off the light, if enough (natural) light is already available in the room. The measured light is considered enough if it exceeds the programmed value on the sensor minus the input **Light Threshold**.
Refer to the driver's and sensor's technical documentation for further details.

Tunable White

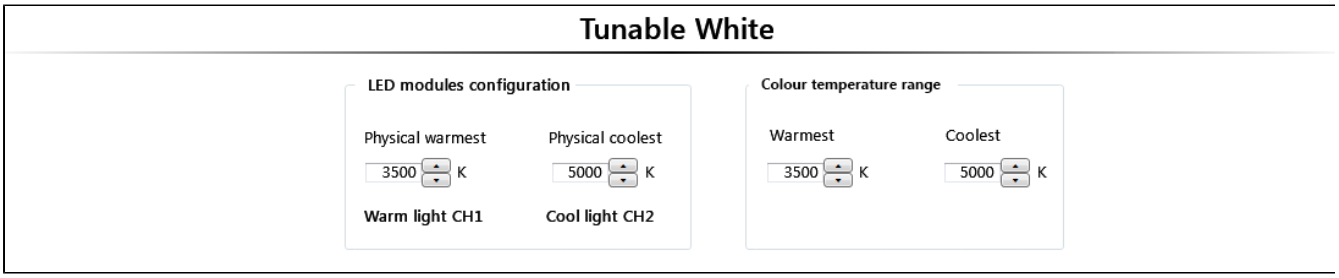
A Tunable White lighting system consists of at least two LED modules with different colour characteristics (typically warm white and cold white). The light of both LED modules is mixed in a way that an observer can not distinguish between the different colours, but recognizes the light source as a single light emitting element. To control and mix the levels of the LED modules independently, the LED driver shall have at least two output channels.

Tunable White for constant voltage LED drivers

Inside the "Tunable White" feature tab in T4T-Development it is possible to configure the Tunable White driver to fit with a Tunable White LED module set in a simple way (so called "CCT mode").
This configuration is needed to achieve a sufficient colour consistency and colour precision while considering the relevant application.

Two feature groups are available:

- LED modules configuration
- Colour temperature range



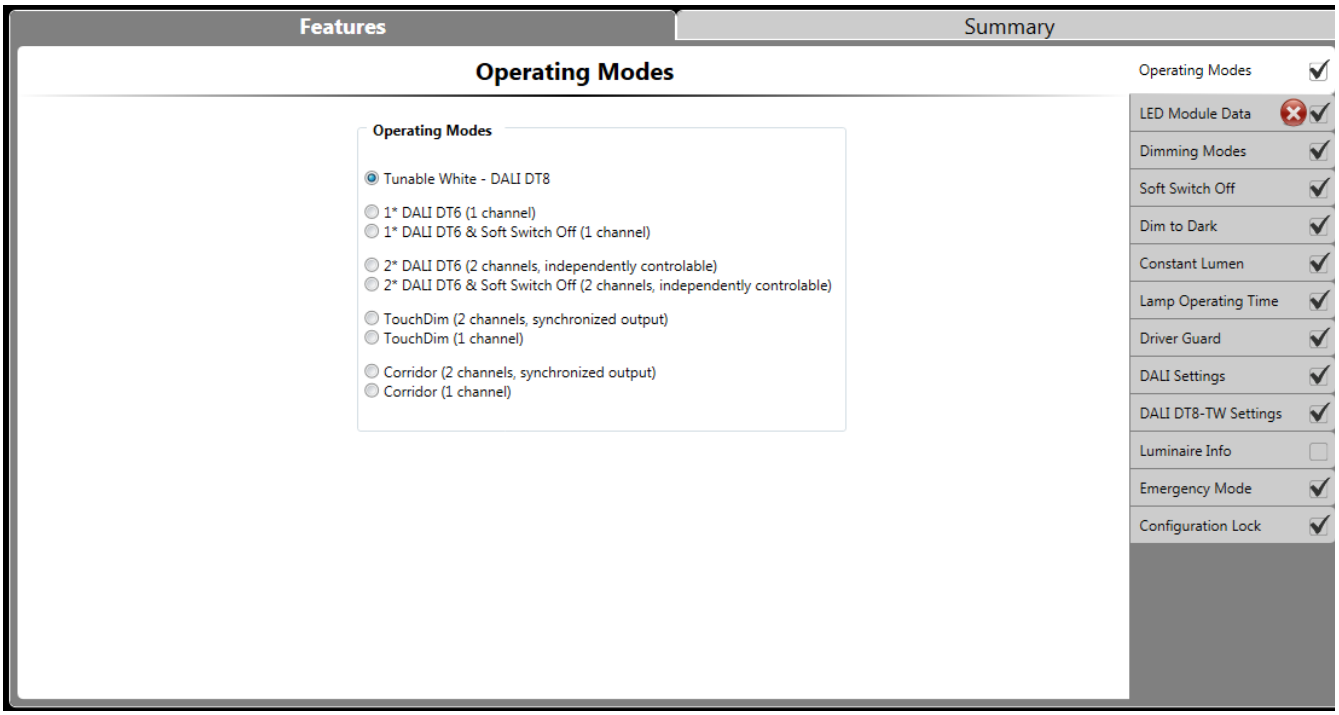
Inside the "LED modules configuration", the nominal CCT (Correlated Colour Temperature) values of the warm light channel 1 and cool light channel 2 can be set (in Kelvin).
Inside the "Colour temperature range" it is possible to define the warmest and coolest allowed values. Moreover, additional colour temperature related parameters are available in the "DALI Settings" feature tab.

Tunable White for constant current LED drivers

Constant current linear drivers with Tunable White offer better color accuracy results due to more dedicated settings in T4T. T4T offers different options how to set up the LED modules depending on the selected Tunable White mode in the Operating Mode tab.

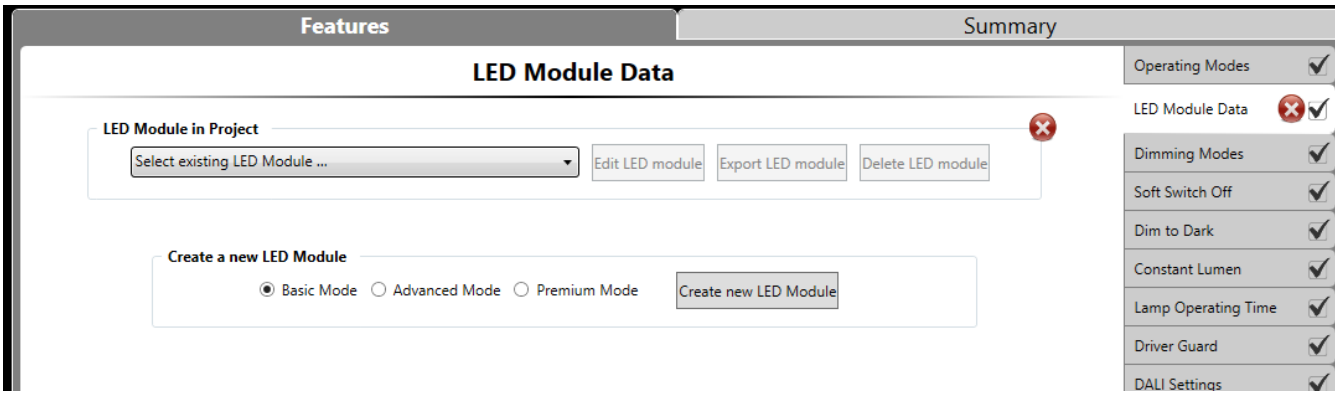
Operating Modes

After creating a new luminaire configuration in T4T and selecting the Tunable White driver from the list, Tuner4TRONIC shows the available operating modes for the driver.
The Tunable White DALI DT8 operating mode is selected by default, , however, there are other operating modes available for different applications, e. g. 1 channel mode DALI DT6 & enhanced options (Soft Switch Off).



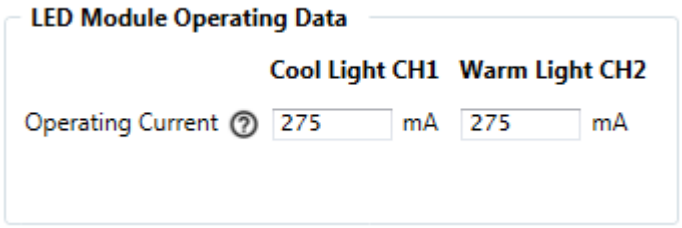
Operating Mode Tunable White - DALI DT8

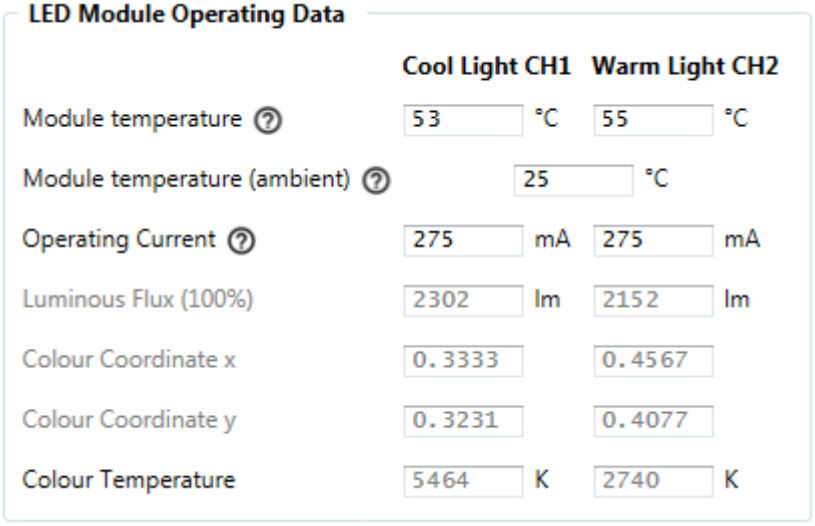
When the Tunable White DALI DT8 mode has been selected, the feature tab "**LED Module Data**" becomes available. Here, the user must load an existing LED module into the (luminaire) project or create a new LED Module for the project. Any created LED Module will be part of the project and only be available for other projects after exporting it manually.



LED Module in Project

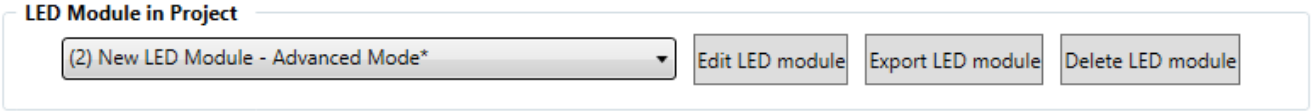
From this drop down menu you can select a predefined LED module. OSRAM LED modules are shown here by default. In case you created and exported an own LED module, it will also be displayed here.
After selecting a LED module, the editable operating data for the LED Module box is shown below. The number of available parameters of this box depends on the precision mode with which the LED module was created: basic, advanced or premium.





Note: To ensure DALI compliance, the operating currents should be chosen in order that the resulting luminous flux is equal for both channels.

The "Edit current LED module" and "Export current LED module" buttons are only available when loading a self created (customized) LED module. OSRAM modules are always available in the T4T and can not be edited.



When clicking the "Export current LED module", the LED module configuration is stored as an xml file and stored on your local hard drive. You can find the xml files under:
C:\Program Files (x86)\OSRAM\Tuner4TRONIC\LEDModule. If you want to copy the LED module data into another computer, simply copy the required xml files to the same folder on the other computer.
The "Delete LED module" button removes the configuration from your computer permanently.

Create a new LED module(s)

In case you are not using an OSRAM LED module, you have to create a new LED module and enter all the parameters that describe your LED module: Module temperatures and Operating currents for each channel, the ambient module temperature, the Voltage, Luminous flux, and Color Coordinates for both channels). After creating an LED module the data can be stored to be able to recall it later from the LED Module in Project drop down menu.

Basic, Advanced and Premium Colour Accuracy Modes

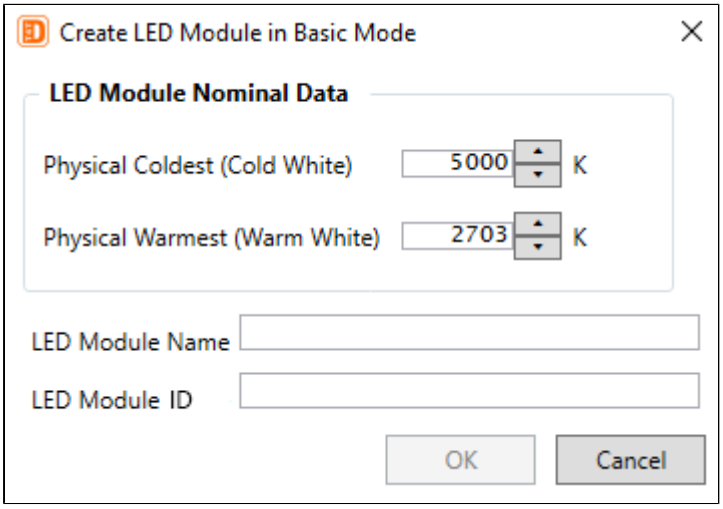
Setting up a LED module can be quite complex as a lot of LED module parameters are needed.
Tuner4TRONIC offers the user three different complexity options to set up an LED module: basic, advanced and premium.
While the basic mode is the easiest to set up (only two parameters are needed) the colour accuracy is not as good as when using the premium mode (where more than 60 parameters are needed to achieve the highest colour accuracy possible).

To save a customized LED module you need to enter a name and a module ID. A module ID is suggested automatically but can be edited. This helps identify the module data when reading an LED driver.

Basic Mode

The simplest way to set up an LED module is the basic mode (also known as "CCT mode").
Here, you can achieve a sufficient colour consistency and colour precision while entering just 2 parameters:

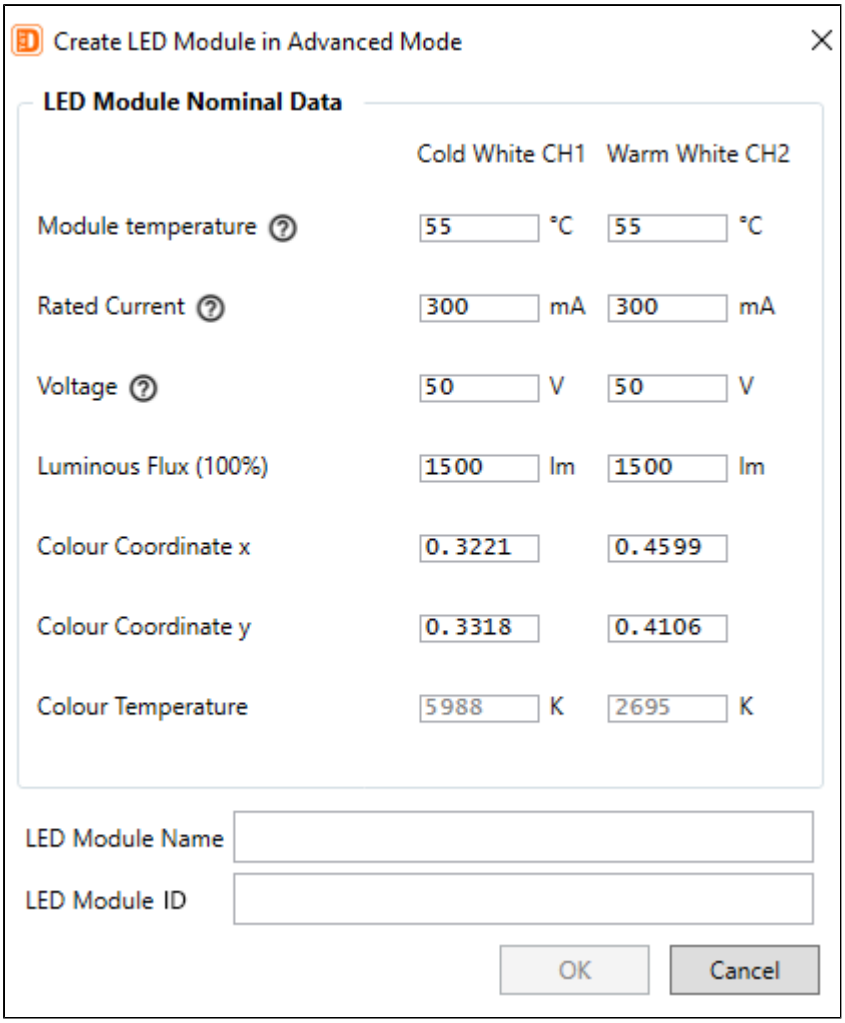
- Physical coldest & warmest



Advanced Mode

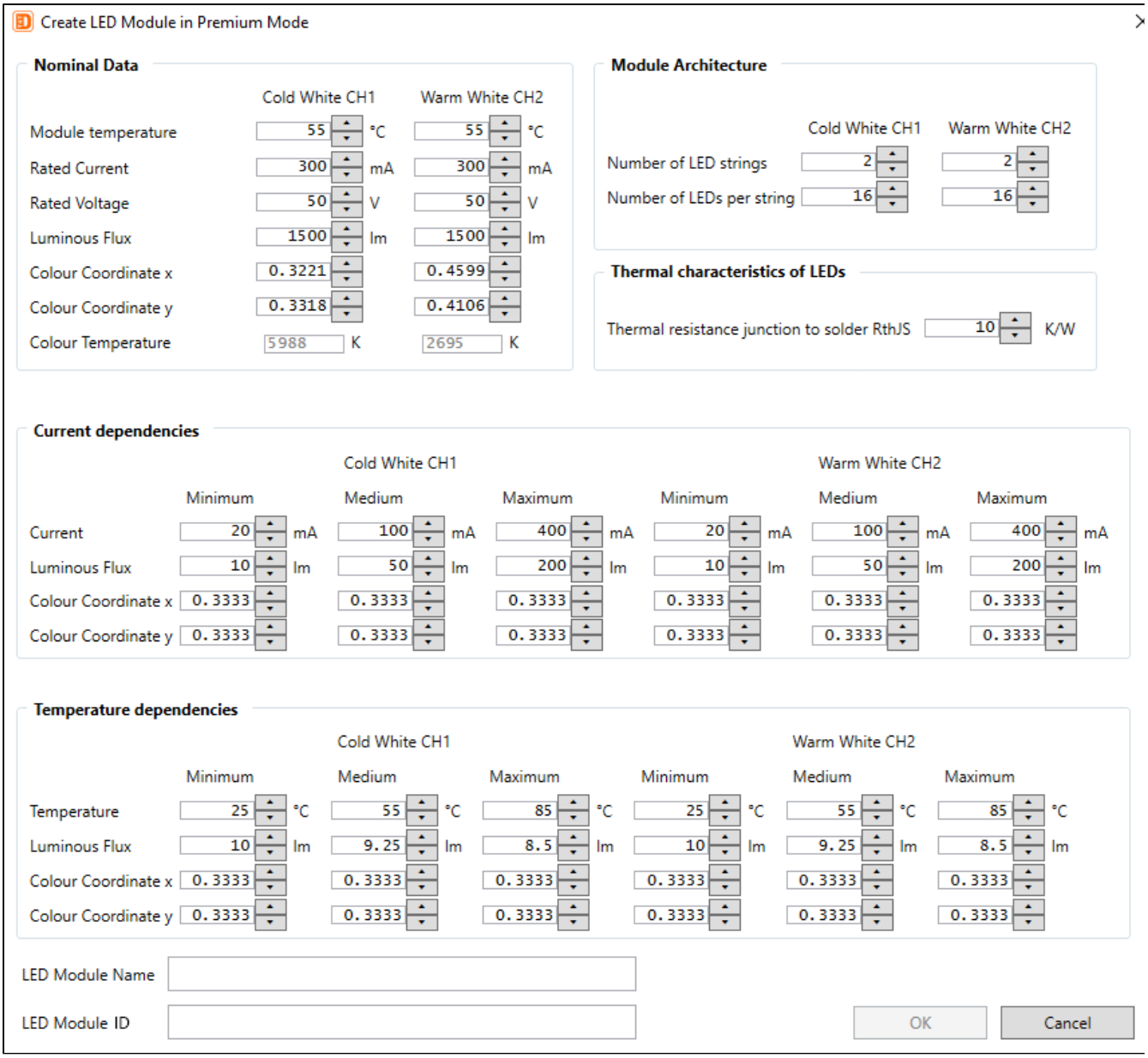
A more accurate way to set up an LED module is the advanced mode.
Here you need to enter 13 parameters to achieve a more precise colour consistency and precision:

- Module temperature (per channel)
- Module ambient temperature
- Rated Current (per channel)
- Voltage (per channel)
- Luminous flux (100%) (per channel)
- Colour Coordinate x (per channel)
- Colour Coordinate y (per channel)



Premium Mode

Using this mode you can achieve the highest quality and precision, however you need to enter over 60 parameters to ensure that you describe the LED module in detail.
All OSRAM LED modules have been created using this mode. To use the premium mode to create an own LED module, a license key is required.



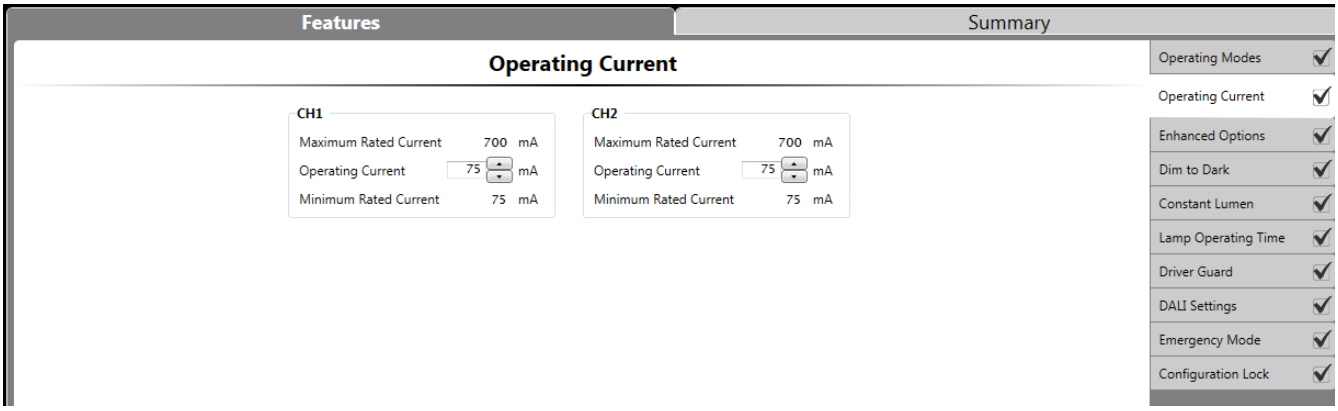
For more information about the LED module parameters please refer to OSRAM's Tunable White application guide:

Tunable White Application Guide

When using Tunable White LED drivers, additional parameters are available in the "DALI Settings" feature tab.

Operating Mode 2* DALI DT6 (2 channel mode)

In this case, the LED driver will behave as 2 individual LED drivers that can be configured almost independently.
Inside some feature tabs (e.g. Operating Current), the settings for each channel can be set up individually.



When using Tunable White LED drivers, additional color temperature parameters are available in the "DALI Settings" feature tab (power on and system failure).

Dim to Warm for Tunable White

A Dim to Warm system enables to automatically change the colour temperature based on the actual output dimming level. High dimming levels result in a cooler colour temperature whilte low dimming levels result in a warmer colour temperature. This behaviour resembles the behaviour of a traditional incandecent lamps. The prerequisite for this feature is a multi-channel TW LED driver with a dual colour temperature LED Module. In Tuner4TRONIC you can control the behavior by entering up to 4 values for the colour temperature and their corresponding dimming levels.

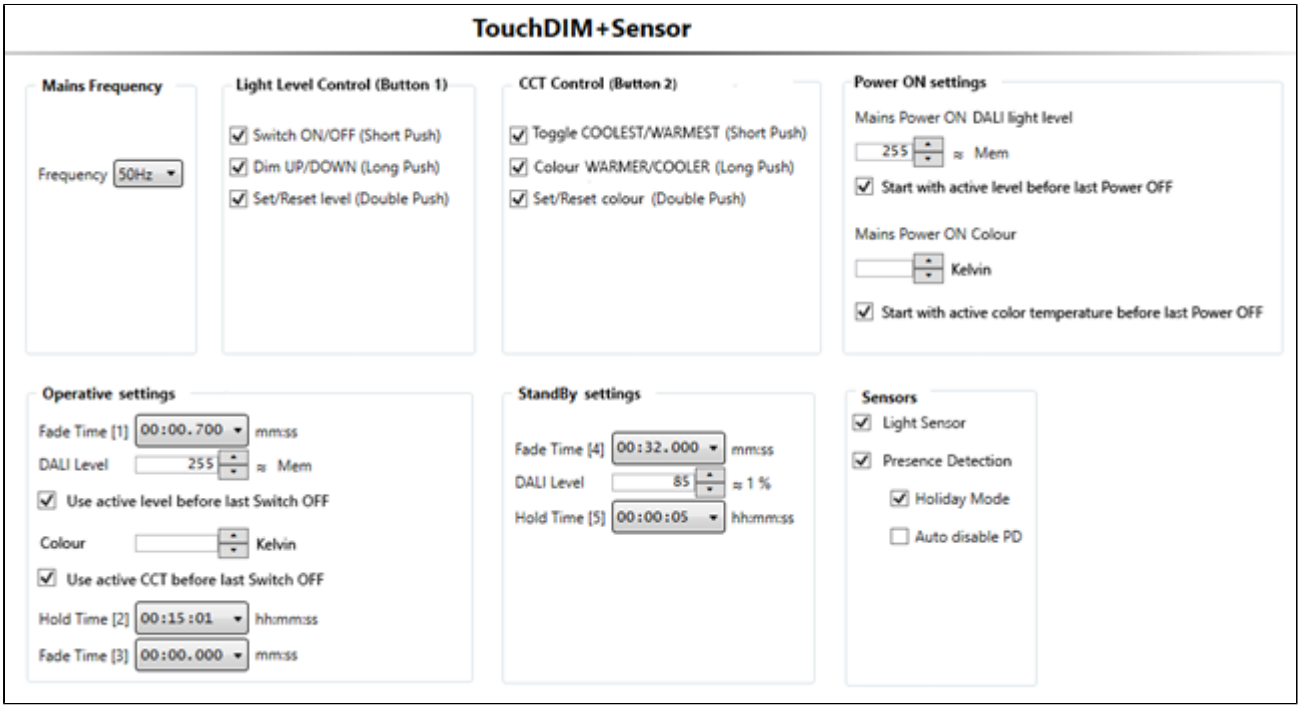
Settings

Colour Temperature	4000	3200	3100	3000	K
Dimming Level	100	50	20	0	%

To use this feature, a license is required.

TouchDIM Tunable White

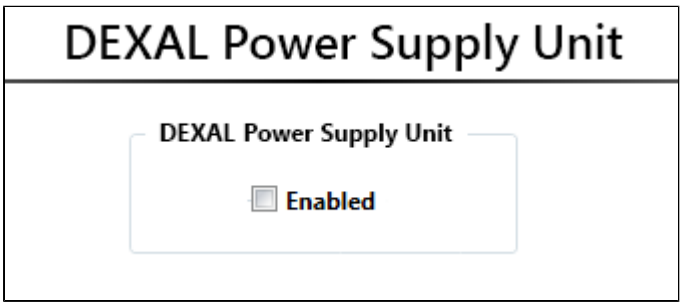
Tunable White constant current drivers that support this operating mode allow to control a secondary button for the colour temperature. The second button allows to toggle between coolest and warmest by doing a short push. Doing a long push, the colour temperature slides from warmer to cooler. A double push sets/resets the coulour temperature.



To use this feature, a license is required.

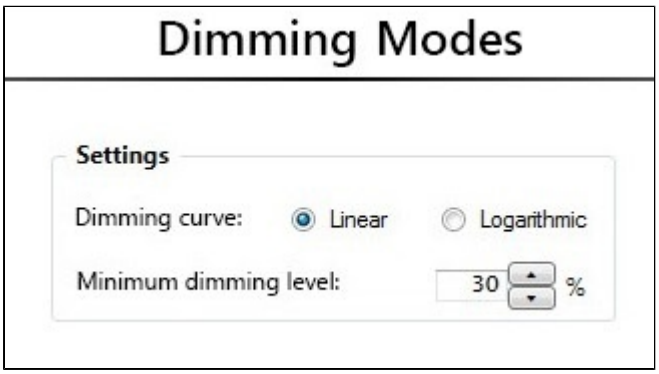
DEXAL Power Supply Unit

DEXAL LED drivers feature a power supply unit for fixture peripherals. The power supply unit can be activated in the "DEXAL Power Supply Unit" feature tab:



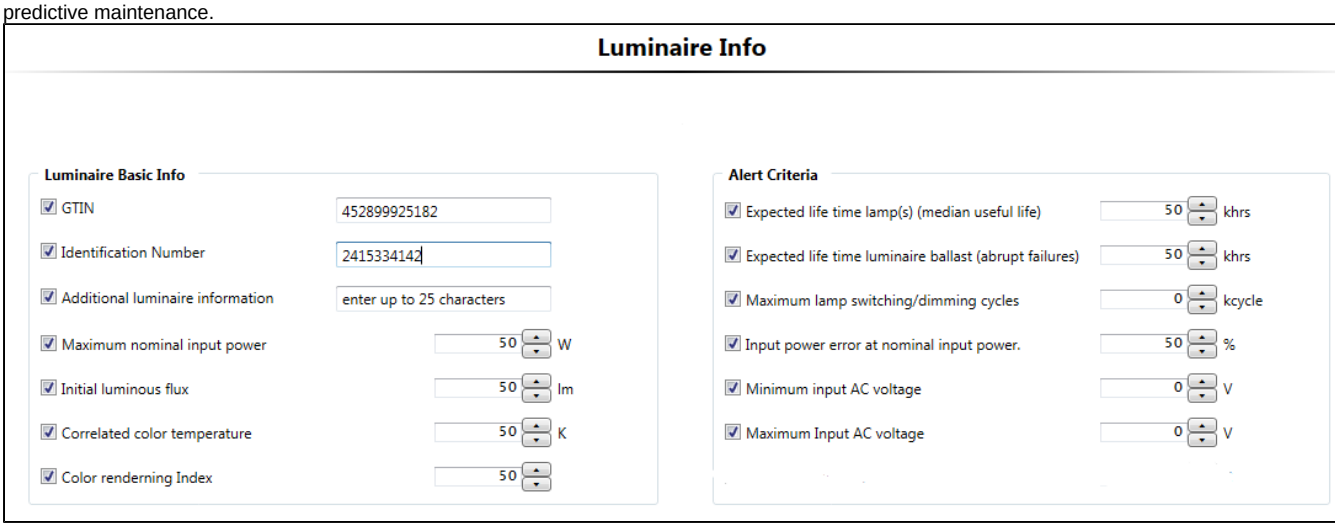
Dimming Modes

OTi 30/50 DEXAL LED drivers allow to change the dimming curve from linear to logarithmic and to set a minimum dimming level. These settings can be found in the "Dimming Modes" feature tab:

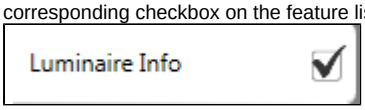


Luminaire Info

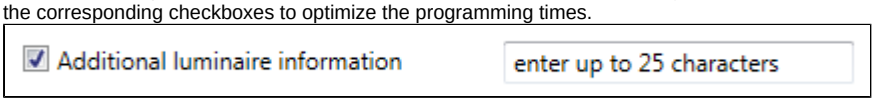
The term “Luminaire info” defines a set of parameters that describes the characteristics of a specific luminaire: luminaire name, brand, power, lumen, expected lifetime, etc.
This data can be stored in the luminaire's driver and can be read by Building Information Management (BIM) systems to simplify the comissioning of the luminaire as well as for service purposes.
With the luminaire information, a better description of the luminaire can be obtained and the luminaire’s end of life information can be used for predictive maintenance.



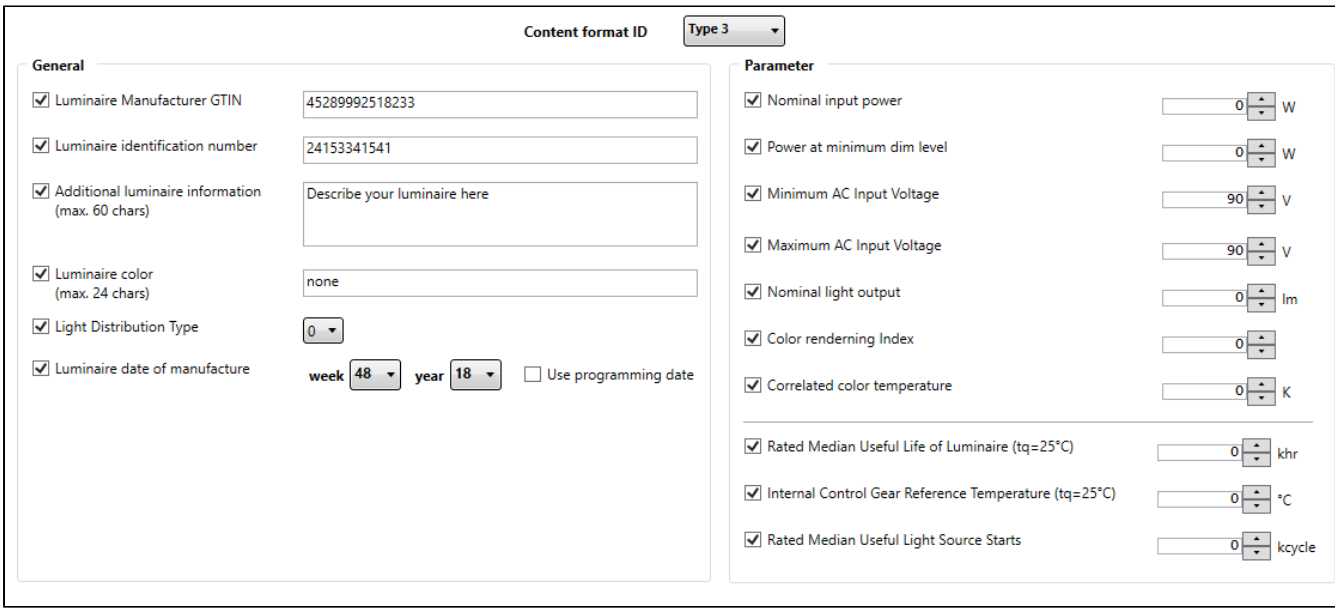
This feature is deactivated by default to avoid longer programming times if the feature is not used. To activate it please make sure to activate the corresponding checkbox on the feature list.



In additon, each parameter of the Luminaire info can be activated individually. Please deactivate the parameters that are not needed by deactivating the corresponding checkboxes to optimize the programming times.



LED drivers supporting the new Zhaga standard (e.g. DEXAL drivers) can use the new Type 3 content format of the Luminaire Info:



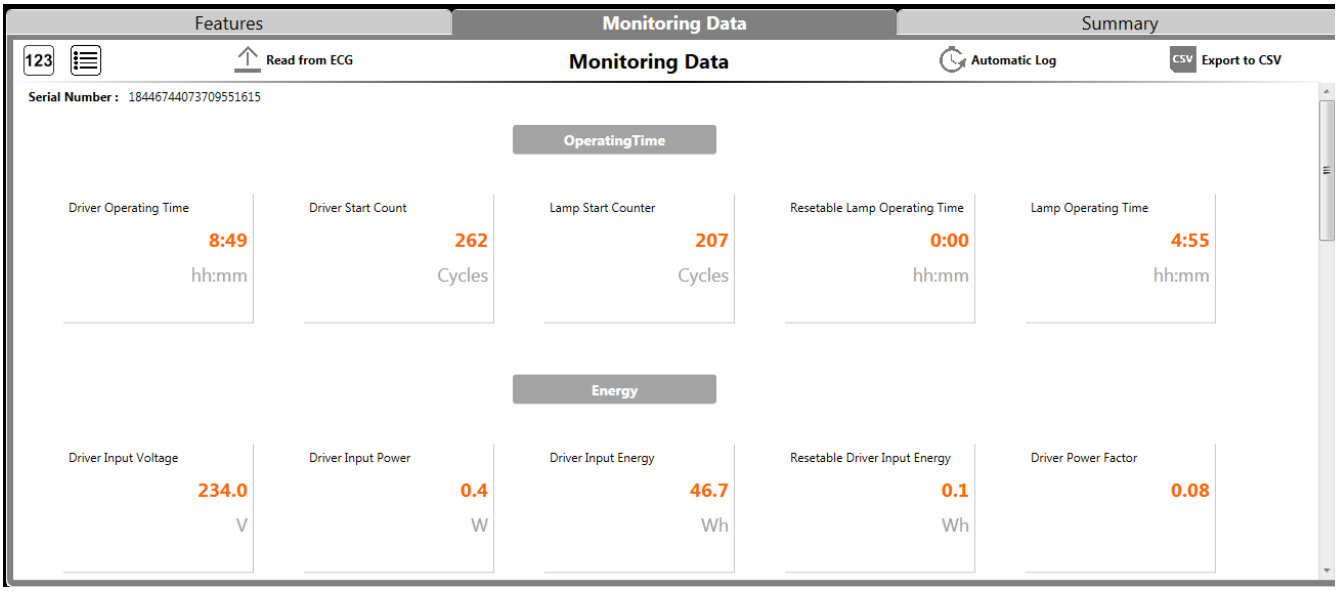
Monitoring Data

Monitoring Data is a new mode in Tuner4TRONIC that allows to read the operational data of a driver e.g. operating times, power, voltage, temperatures, failures.
These parameters stored in the luminaire's driver can be used for example for service/diagnostic purposes and to feed Light Management Systems (LMS) with status information in real time or/and with “history data” of the luminaire.

Only drivers supporting Monitoring Data can show this mode. Monitoring Data can be found as a new tab between the Features and Summary tabs. Monitoring data can be displayed in a dashboard view or in a table view. To toggle between both modes click on the corresponding buttons on the upper left corner:



To start, click the "Read from Driver" Button on the upper left part of the screen. If the driver was locked you will need to enter the driver's password to continue.
After reading the device, T4T will show the devices unique serial number as well as the available parameters.



The automatic log function allows to enter a time value, after which the data will be refreshed automatically.
In addition, the parameters can be exported as a CSV file. The unique serial number of the device will be used as the file name.

There are two versions of it: Monitoring Data v1 and Monitoring Data v2. Monitoring Data v1 is outdated.

Disclaimer: As far as features of the Tuner4TRONIC-Tool are used to readout data of LED drivers, the provided data has the usual limitations regarding accuracy and reliability due to technical reasons based on the current state of art and technology and is only meant as clue and aid for diagnostic purposes. Therefor, the manufacturer of the software and the drivers shall not be liable for the accuracy and reliability of the provided results including any incorrect data or their incorrect technical interpretation due to the current state of technology

List and description of parameters of Monitoring Data v2:

Energy	Active Energy & Power	Active Energy	The integral of the instantaneous power over a time interval, measured in units of watt hour.
		Active Power*	Under periodic conditions, mean value, taken over one period, of the instantaneous power, measured in watt.
	Apparent Energy & Power	Apparent Energy	The integral of Apparent Power over a time interval, measured in units of VA hour.
		Apparent Power*	The product of the rms voltage between the terminals of a two-terminal element or two-terminal circuit and the rms electric current in the element or circuit.
	Load Side Energy & Power	Active Energy Loadside	The integral of Load side Power over a time interval, measured in units of watt hour.
		Active Power Loadside*	the input power minus the sum of power used for the DALI bus power supply (if present) and the power used for the AUX power supply (if present). Note: the losses for both power supplies (if present) may be neglected in the measurement
Diagnos	Driver	Operating	Counts the control gear operating time in seconds if the control gear is powered regardless of the status of lampOn bit.

tic & Maintenance		Time	
		Start Counter	Counts the number of control gear starts that are induced by a power cycle of the external supply. A power cycle shall be counted if the power on time is at least 600ms.
		External Supply Voltage*	RMS value of external supply voltage
		External Supply Voltage Frequency*	Frequency of external supply voltage. Indication as follows: 0 in case of 0 Hz (pure DC or rectified AC voltage). Examples for frequency indication: 17 in case of 16,7 Hz, 50 in case of 50 Hz
		Power Factor*	ControlGearPowerFactor = 100 means: the control gear has a power factor of 1.00
		Overall Failure Condition*	Shows if the LED driver experienced a failure or not.
		Overall Failure Condition Counter	Counts the number of overall failure conditions.
		External Supply Undervoltage*	Shows if the LED driver experienced a voltage below the lower end of the specified input voltage range.
		External Supply Undervoltage Counter	Counts the number of times the External Supply experienced Undervoltage
		External Supply Overvoltage*	Shows if the LED driver experienced a voltage above the higher end of the specified input voltage range.
		External Supply Overvoltage Counter	Counts the number of times the External Supply experienced Overvoltage
		Output Power Limitation*	Shows if the output power of the driver was higher than the output power limit.
		Output Power Limitation Counter	Counts the number times the output power was higher than the output power limit.
		Thermal Derating*	Shows if the temperature of the LED driver was reduced by reducing the output current of the driver due to reaching a temperature that could affect the lifetime and/or performance of the driver.
		Thermal Derating Counter	Counts the number of times the temperature was reduced due to thermal derating
		Thermal Shutdown*	Shows if the output current of the LED driver was reduced to zero due to reaching a temperature that could affect the lifetime and/or performance of the driver and is higher than the Thermal Derating Temperature threshold.
		Thermal Shutdown Counter	Counts the number of thermal shutdowns
		Temperature (internal)*	Indicates the internal temperature of the control gear. Example: A value of 60 means 0 °C, a value of 0 means – 60 °C.
		Output Current Percent*	Driver output current in % related to the nominal output current setting of the control gear. It includes all driver internal reductions of output current except reduction by constant lumen functionality.
	Lamp	Start Counter Resettable	Counts the starts of the light source. The parameter can be resetted.
		Start Counter (Total)	Counts the total starts of the light source.
		On Time Resettable (CLO)	Counts the light source operating time in seconds. The parameter can be resetted.
		On Time (Total)	Counts the total light source operating time in seconds.

		Output Voltage*	Indicates the actual driver output voltage
		Output Current*	Indicates the actual driver output current
		Overall Failure Condition	Shows if the luminaire experienced a failure ("Lamp failure") or not.
		Overall Failure Condition Counter	Counts the number of lamp failures
		Short Circuit	Shows if the light source has a lamp failure with short circuit.
		Short Circuit Counter	Counts the number of short circuits of the lamp
		Open Circuit	Shows if the light source has a lamp failure with open circuit.
		Open Circuit Counter	Counts the number of open circuits of the lamp
		Thermal Derating	Shows if the temperature of the Lamp was reduced by reducing the output current of the driver due to reaching a temperature that could affect the lifetime and/or performance of the lamp
		Thermal Derating Counter	Counts the number of times the temperature was reduced due to thermal derating
		Thermal Shutdown*	Shows if the output current of the LED driver of the lamp was reduced to zero due to reaching a temperature that could affect the lifetime and/or performance of the lamp and is higher than the Thermal Derating Temperature threshold.
		Thermal Shutdown Counter	Counts the number of thermal shutdowns
		Temperature*	Indicates the temperature of the light source. Example: A value of 60 means 0 °C, a value of 0 means – 60 °C. The temperature should be measured by an external sensor that is thermaly coupled to the light source. The interface between sensor and driver is manufacturer specific and is configured in a manufacturer specific way.

*Please note: Reading the Monitoring Data of a driver using the NFC interface will not show all parameters in comparison as using the DALI interface, as some parameters are not available when reading through NFC (e.g. power). Parameters marked with an asterisk on the table above can only be read via DALI.

License Key(s)

To activate certain additional functionalities in Tuner4TRONIC it is necessary to introduce a license key, e.g.

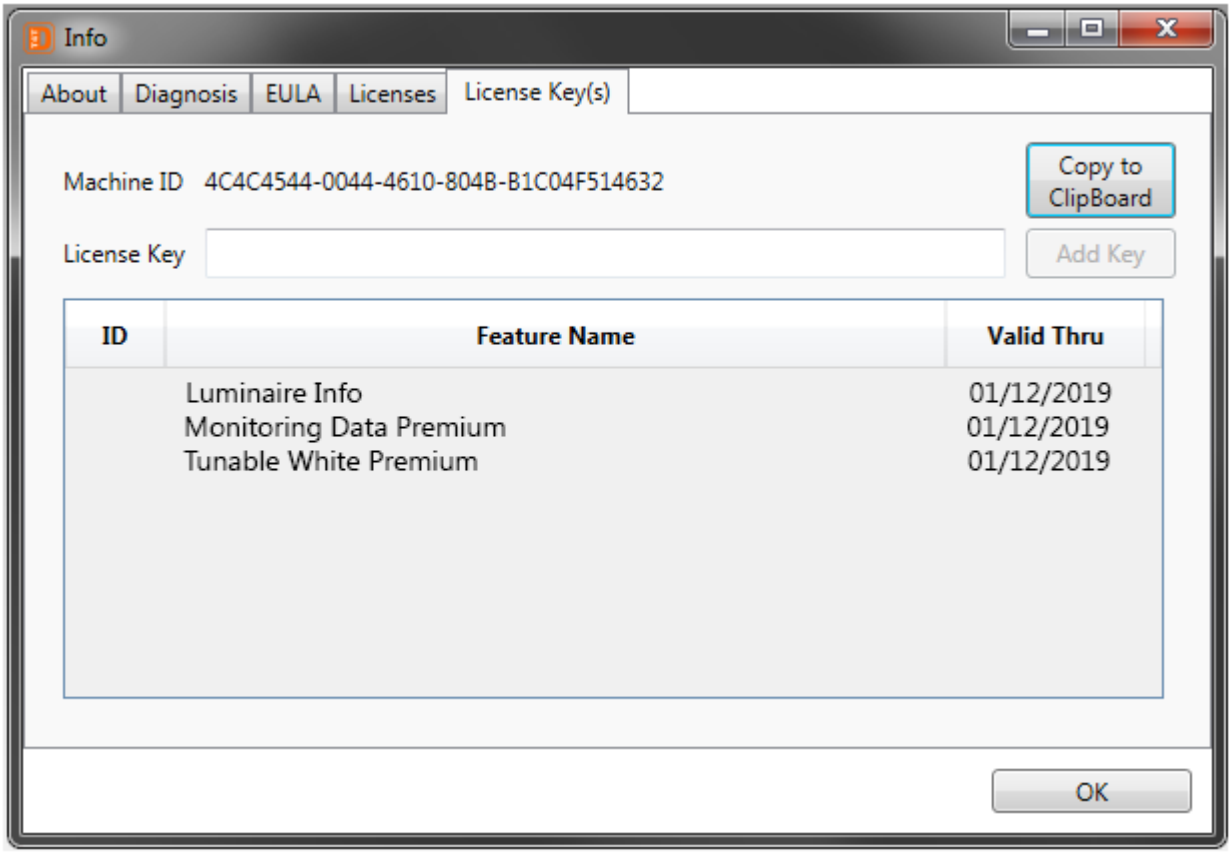
- Tunable White - Premium parameters
- Tunable White - Dim to warm
- Tunable White - Touch Dim
- Service Key in Configuration Lock

The license key management can be found in the menu Help About License Key(s).

In that window, the unique machine ID of the computer will be displayed.
When ordering a license it is necessary to copy this machine ID by clicking on the "Copy to clipboard" button and send it to OSRAM.
OSRAM will then generate a license key specifically designed for that machine ID (i.e. the license can't be used on another computer).
Entering the license into the "License Key" field and clicking the "Add Key" button will activate the license and the corresponding feature will be available for use in Tuner4TRONIC.

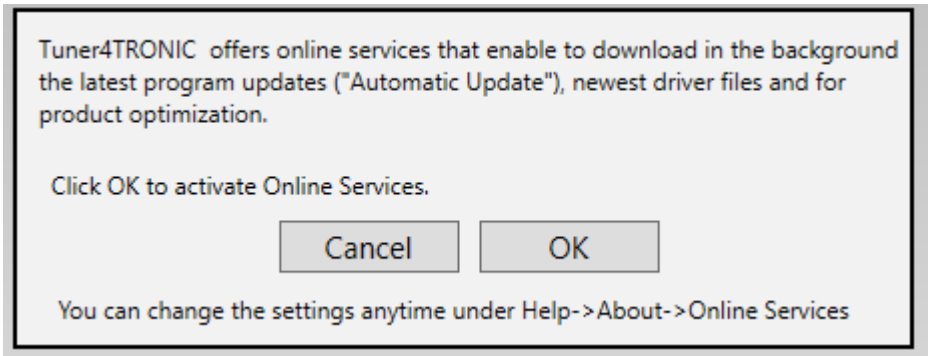
All entered licenses are displayed in the list below together with their expiration date.

Please contact your OSRAM sales representative to obtain licenses.

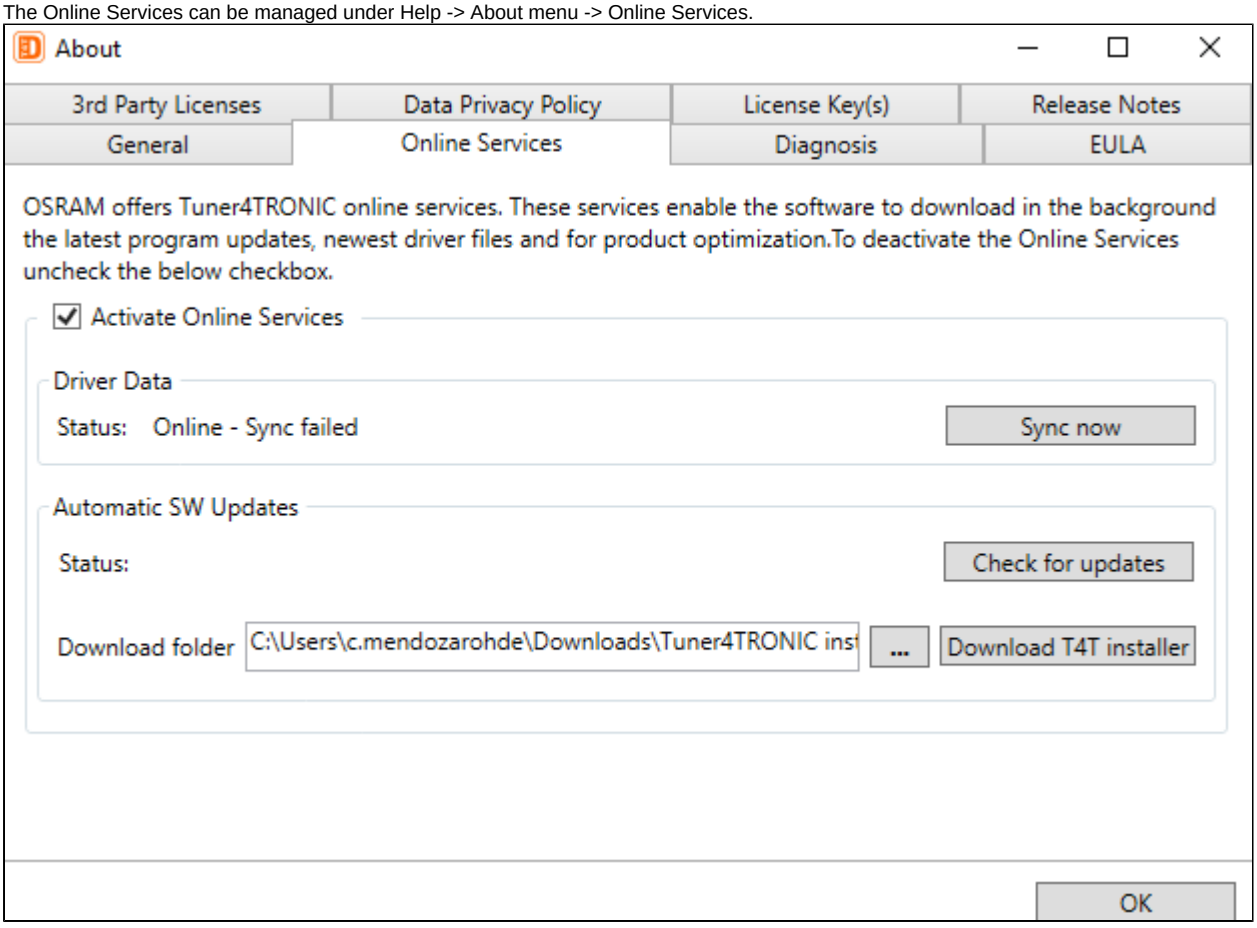


Online services

When starting Tuner4TRONIC, a pop-up appears asking for permission to enable the online services.



The Online Services can be managed under Help -> About menu -> Online Services.



The online services enable to download in the background the latest program updates ("Automatic Update"), newest driver files and for product optimization.

In case this feature is disabled intentionally or for technical reasons, please consult regularly www.osram.com/t4t for possible software updates and news.

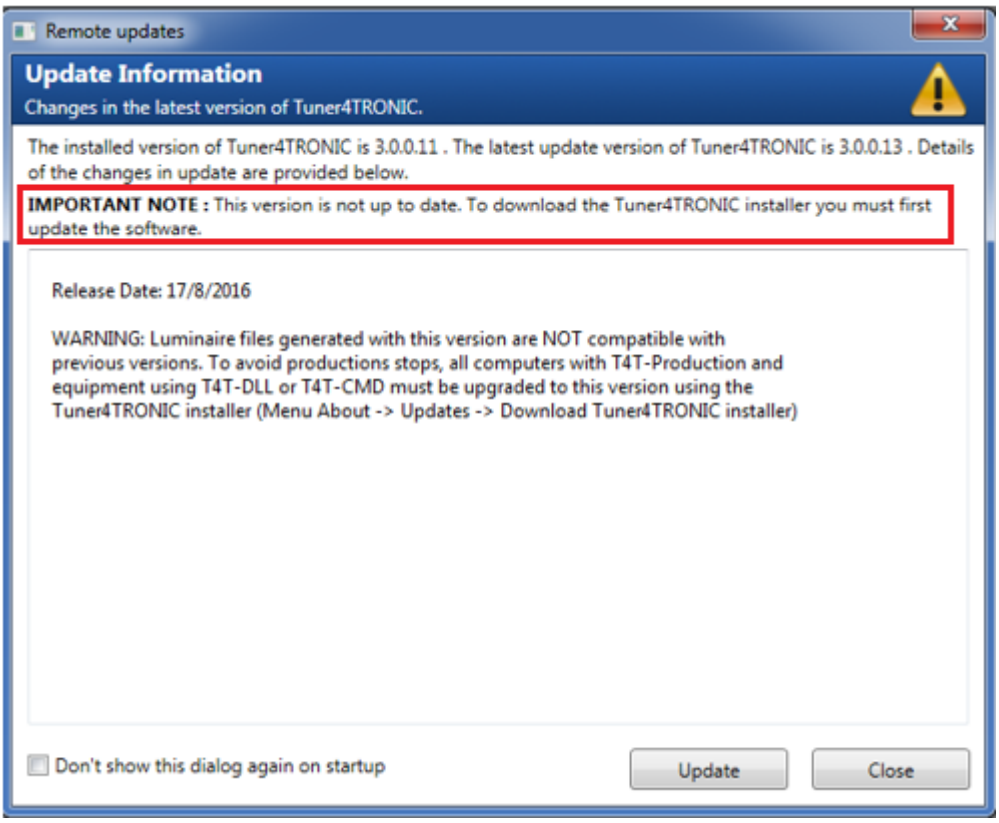
When a new update is available, a pop-up will appear prompting the user to install it.

Alternatively, the installation package can be downloaded by clicking on the "Download T4T installer".

- **Download Tuner4TRONIC installer** – Downloads the Tuner4TRONIC installer from the update server to the configured download folder. If the installed Tuner4TRONIC version is not up to date, it's needed to update the software before downloading the installer. The Remote updates window will open automatically prompting to update to the latest version first. After updating to the latest version, the latest

Tuner4TRONIC installer can be downloaded by clicking the "Download Tuner4TRONIC installer" option. The T4T Installer can be used to update further systems not connected to the Internet or T4T-Production version.

- **Download Folder** - The download path for the latest installer of Tuner4TRONIC can be configured by clicking the "..." button.
- **Check for updates** - Manually checks for updates on the server.



After clicking "Update", T4T will close the program to start the installation of the update.

Appendix 1 - LED driver families

Here is a comprehensive list of all OSRAM LED driver families that support this feature. At the moment T4T supports eight families of LED drivers. A programming file of any of the LED drivers within a family can be used to program any of the other family drivers (if family programming is not disabled).

INDOOR LED DRIVERS

Family 1: OPTOTRONIC Intelligent (Compact)

Generation 1 (DALI-1)

OTi DALI 25/220-240/700 LT2
GTIN="4052899919457" BasicCode="AA62434"

OTi DALI 35/220-240/1A0 LT2
GTIN="4052899919440" BasicCode="AA62433"

OTi DALI 50/220-240/1A4 LT2 FAN
GTIN="4052899919433" BasicCode="AA59717"

Generation 2 (DALI-2)

OTi DALI 15/220-240/1A0 LT2
GTIN="4052899324879" BasicCode="AB32361"

OTi DALI 25/220-240/700 LT2 (G2)
GTIN="4052899488144" BasicCode="AB42877"

OTi DALI 35/220-240/1A0 LT2 (G2)
GTIN="4052899488168" BasicCode="AB42876"

OTi DALI 50/220-240/1A4 LT2 FAN
GTIN="4052899488182" BasicCode="AB42878"

Generation 3 (DALI-2, NFC)

OTi DALI 15/220-240/1A0 LT2 NFC
GTIN="4052899548190" BasicCode="AM12411"

OTi DALI 25/220-240/700 LT2 NFC
GTIN="4052899548213" BasicCode="AM12229"

OTi DALI 35/220-240/1A0 LT2 NFC
GTIN="4052899548237" BasicCode="AM12412"

OTi DALI 50/220-240/1A4 LT2 FAN NFC
GTIN="4052899548251" BasicCode="AM12413"

Generation 4

OTi DALI 15/220-240/1A0 NFC DATA (G4)
GTIN="4062172061766" BasicCode="AM29183"

OTi DALI 25/220-240/700 NFC
GTIN="4062172017909" BasicCode="AM22188"

OTi DALI 35/220-240/1A0 NFC
GTIN="4062172017923" BasicCode="AM22187"

OTi DALI 50/220-240/1A4 NFC
GTIN="4062172061889" BasicCode="AM29791"

Family 2: OPTOTRONIC Intelligent (DALI Linear SELV)

Generation 1

OTi DALI 35/220-240/700 LT2 L
GTIN="4052899245389" BasicCode="AA75167"

OTi DALI 50/220-240/1A4 LT2 L
GTIN="4052899028098" BasicCode="AA53234"

OTi DALI 80/220-240/1A6 LT2 L
GTIN="4052899028074" BasicCode="AA51795"

OTi DALI 80/220-240/2A1 LT2 L
GTIN="4052899028050" BasicCode="AA57587"

Generation 1-D2

OTi DALI 80/220-240/1A6 LT2 L
GTIN="4052899028074" BasicCode="AM20346"

OTi DALI 80/220-240/2A1 LT2 L
GTIN="4052899028050" BasicCode="AM21411"

Generation 2

OTi DALI 35/220-240/700 LT2 L
GTIN="4052899551763" BasicCode="AM06315"

OTi DALI 50/220-240/1A4 LT2 L
GTIN="4052899551787" BasicCode="AM06314"

Family 3: OPTOTRONIC Intelligent (DALI Linear Direct Power)

Generation 2

OTi DALI 35/220-240/400 D LT2 L (G2)
GTIN="4052899957053" BasicCode="AB33078"

OTi DALI 60/220-240/550 D LT2 L (G2)
GTIN="4052899188662" BasicCode="AB36003"

OTi DALI 90/220-240/700 D LT2 L (G2)
GTIN="4052899446816" BasicCode="AB46767"

OTi DALI 90/220-240/1A0 LT2 L (G2)
GTIN="4008321867568" BasicCode="AB33079"

Generation 3

OTi DALI 35/220-240/400 D LT2 L (G3)
GTIN="4052899494220" BasicCode="AM00139"

OTi DALI 60/220-240/550 D LT2 L (G3)
GTIN="4052899494206" BasicCode="AM00138"

OTi DALI 90/220-240/700 D LT2 L (G3)
GTIN="4052899494244" BasicCode="AM00140"

OTi DALI 90/220-240/1A0 LT2 L (G3)
GTIN="4052899494268" BasicCode="AM00141"

Generation 3 (Data)

OTi DALI 35/220-240/400 D LT2 L (DATA)
GTIN="4062172082129" BasicCode="AN00948"

OTi DALI 60/220-240/550 D LT2 L (DATA)
GTIN="4062172082167" BasicCode="AN00950"

OTi DALI 90/220-240/700 D LT2 L (DATA)
GTIN="4062172082327" BasicCode="AN00952"

OTi DALI 90/220-240/1A0 LT2 L (DATA)
GTIN="4062172082242" BasicCode="AN00951"

Generation 4

OTi DALI 25/220-240/300 D NFC F L
GTIN="4062172020749" BasicCode="AM18335"

OTi DALI 35/220-240/400 D NFC F L
GTIN="4062172020763" BasicCode="AM18316"

OTi DALI 75/220-240/500 D NFC F L
GTIN="4062172020787" BasicCode="AM18317"

Family 4: OPTOTRONIC Intelligent Tunable White Generation 1

OTi DALI 35/220-240/400 NFC TW L
GTIN="4052899990302" BasicCode="AM14467"

OTi DALI 75/220-240/700 NFC TW L
GTIN="4052899990326" FW="1" HW="1" BasicCode="AM12456"

Family 5: OPTOTRONIC Intelligent Tunable White Generation 2

OTi DALI 35/220-240/400 NFC TW L
GTIN="4052899990302" FW="2" HW="1" BasicCode="AM28015"

OTi DALI 75/220-240/700 NFC TW L">
GTIN="4052899990326" FW="2" HW="1" BasicCode="AM28017"

Family 6: OPTOTRONIC FIT NFC

OT FIT 35/220-240/350 D NFC L
GTIN="4052899990166" BasicCode="AM10972"

OT FIT 75/220-240/550 D NFC L
GTIN="4052899990180" BasicCode="AM10971"

Family 7: OPTOTRONIC Intelligent Industry

OTi DALI 100/220-240/700 D NFC IND L
GTIN="4052899559516" BasicCode="AM07661"

OTi DALI 150/220-240/1A0 D NFC IND L
GTIN="4052899559530" BasicCode="AM07662"

Family 8: OPTOTRONIC DEXAL Linear

OTi DX 35/220-240/400 D NFC L
GTIN="4052899590380" BasicCode="AM18536"

OTi DX 75/220-240/600 D NFC L
GTIN="4052899590403" BasicCode="AM18537"

OTi DX 100/220-240/700 D NFC IND L
GTIN="4062172050883" BasicCode="AM18536"

OTi DX 150/220-240/850 D NFC IND L
GTIN="4062172050920" BasicCode="AM18537"

Family 9: OPTOTRONIC DEXAL Compact

OTi DX 35/220-240/1A0 NFC
GTIN="4062172017961" BasicCode="AM22185"

OTi DX 25/220-240/700 NFC
GTIN="4062172017947" BasicCode="AM22186"

Family 10: OPTOTRONIC Compact NFC

Family 11: OPTOTRONIC FIT IND NFC

OT FIT 100/220-240/700 D NFC IND L
GTIN="4052899990128" BasicCode="AM16013"

OT FIT 150/220-240/700 D NFC IND L
GTIN="4052899990142" BasicCode="AM15161"

Family 12: OPTOTRONIC FIT IND Ultraflat NFC

OT FIT 35/220-240/400 D LT2 UF L
GTIN="4052899590960" BasicCode="AM17670"

OT FIT 75/220-240/700 D LT2 UF L
GTIN="4052899590984" BasicCode="AM17671"

Family 13: OPTOTRONIC Intelligent Ultraflat

Generation 1

OTi DALI 35/220-240/400 D LT2 UF L (G1)
GTIN="4052899957022" BasicCode="AB45032"

OTi DALI 75/220-240/700 D LT2 UF L (G1)
GTIN="4052899957046" BasicCode="AB30663"

Generation 2

OTi DALI 35/220-240/400 D LT2 UF L (G2)
GTIN="4052899957022" BasicCode="AB47614"

OTi DALI 75/220-240/700 D LT2 UF L (G2)
GTIN="4052899957046" BasicCode="AB47615"

OUTDOOR LED DRIVERS

Family 14: OPTOTRONIC 1DIM

Generation 1

OT 20/120-277/1A0 1DIMLT2 G1 CE
GTIN="4052899517400" BasicCode="AM08360"

OT 20/120-277/1A0 1DIMLT2 G1 CE
GTIN="4052899517400" BasicCode="AM21551"

OT 40/170-240/1A0 1DIMLT2 G1 CE
GTIN="4052899517424" BasicCode="AM08361"

OT 40/170-240/1A0 1DIMLT2 G1 CE
GTIN="4052899517424" BasicCode="AM21553"

OT 75/120-277/1A0 1DIMLT2 G1 CE
GTIN="4052899541092" BasicCode="AM10207"

OT 110/170-240/1A0 1DIMLT2 G1 CE
GTIN="4052899541115" BasicCode="AM10206"

OT 20/120-277/1A0 1DIMLT2 G1 CE

GTIN="4052899517400" BasicCode="AM28404"

OT 40/170-240/1A0 1DIMLT2 G1 CE
GTIN="4052899517424" BasicCode="AM28405"

OT 75/120-277/1A0 1DIMLT2 G1 CE
GTIN="4052899541092" BasicCode="AM28406"

OT 110/170-240/1A0 1DIMLT2 G1 CE
GTIN="4052899541115" BasicCode="AM28407"

Generation 2

OT 75/220-240/1A0 1DIM G2 CE
GTIN="4052899605367" BasicCode="AM21584"

OT 165/220-240/1A0 1DIM G2 CE
GTIN="4052899605381" BasicCode="AM21585"

Family 15: OPTOTRONIC 4DIM

OT 40/120-277/1A0 4DIMLT2 E
GTIN="4052899925182" BasicCode="AA64275"

OT 60/170-240/1A0 4DIMLT2 E
GTIN="4052899925199" BasicCode="AA67485"

OT 90/170-240/1A0 4DIMLT2 E
GTIN="4052899925205" BasicCode="AA66408"

OT 165/170-240/1A0 4DIMLT2 E
GTIN="4052899925212" BasicCode="AA67486"

Family 16: OPTOTRONIC 4DIM G2 CE

OT 20/120-277/1A0 4DIMLT2 G2 CE
GTIN="4052899981928" BasicCode="AM04626"

OT 40/170-240/1A0 4DIMLT2 G2 CE
GTIN="4052899981935" BasicCode="AM04628"

OT 20/120-277/1A0 4DIMLT2 G2 CE
GTIN="4052899981928" BasicCode="AM21550"

OT 40/170-240/1A0 4DIMLT2 G2 CE
GTIN="4052899981935" BasicCode="AM21552"

OT 75/120-277/1A0 4DIMLT2 G2 CE
GTIN="4052899981942" BasicCode="AM03550"

OT 110/170-240/1A0 4DIMLT2 G2 CE
GTIN="4052899981959" BasicCode="AM03548"

OT 20/120-277/1A0 4DIMLT2 G2 CE
GTIN="4052899981928" BasicCode="AM28408"

OT 40/170-240/1A0 4DIMLT2 G2 CE
GTIN="4052899981935" BasicCode="AM28409"

OT 75/120-277/1A0 4DIMLT2 G2 CE
GTIN="4052899981942" BasicCode="AM28410"

OT 110/170-240/1A0 4DIMLT2 G2 CE
GTIN="4052899981959" BasicCode="AM28411"

Family 17: OPTOTRONIC DEXAL (OUTDOOR)

OT DX 40/220-240/1A0 DIMA E
GTIN="4052899999664" BasicCode="AM18522"

OT DX 75/220-277/1A0 DIMA E
GTIN="4052899999671" BasicCode="AM19244"

OT DX 110/220-240/1A0 DIMA E
GTIN="4052899999688" BasicCode="AM18435"

OT DX 165/220-240/1A0 DIMA E
GTIN="4052899999695" BasicCode="AM19245"

Family 18: AC Flats

Generation 1

PL-FLAT-AC-DA-G2 1500-830 230V
GTIN="4052899969698" BasicCode="AB39386"

PL-FLAT-AC-DA-G2 2500-830 230V
GTIN="4052899969711" BasicCode="AB39387"

PL-FLAT-AC-DA-G2 1500-840 230V
GTIN="4052899969704" BasicCode="AB39390"

PL-FLAT-AC-DA-G2 2500-840 230V
GTIN="4052899969728" BasicCode="AB39393"

Generation 3

PL-FLAT AC G3 DALI 830 4000lm 230V
GTIN="4052899605626" BasicCode="AM27268"

PL-FLAT AC G3 DALI 840 4000lm 230V
GTIN="4052899605640" BasicCode="AM27269"

PL-FLAT AC G3 DALI 830 5000lm 230V
GTIN="4052899605664" BasicCode="AM27270"

PL-FLAT AC G3 DALI 840 5000lm 230V
GTIN="4052899605688" BasicCode="AM27271"

UNSUPPORTED DRIVERS

Please note that family programming is not available for:

- non-LED drivers (e.g. HID and FLUO drivers)
- non-DALI OT drivers with universal input voltage 120-277 VAC
- APAC P7 WP VS10/20 drivers
- Light engines (PrevaLED Cubes)
- Batch programming
- Luminaire configurations with two different drivers
- 4DIM to 4DIM G2 CE
- Constant Current Tunable White drivers
- The following LED drivers (where newer generations are available):

  OTi DALI 90/220-240/1A0 LT2 L - BasicCode="AA67888"
  OTi DALI 60/220-240/550 D LT2 L - BasicCode="AA69308"