

Tuner4TRONIC® Production 4

Please note:

All information in this guide has been prepared with great care. INVENTRONICS, however, does not accept liability for possible errors, changes and/or omissions. Please check www.inventronics-light.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.

Table of content

1 About Tuner4TRONIC	2
1.1 Purpose and Application	2
1.2 Files Types	4
1.3 Workflow between the different T4T Tools	4
1.4 System Requirements	5
1.5 Programming Interfaces	6
1.6 Preparing a driver with DALI interface for programming	7
1.7 Preparing a driver with NFC interface for programming	8
1.8 Preparing a driver with Prog+/Prog- interface for programming	9
1.9 Software Installation	9
2 Using T4T Production	10
2.2 Programming Page	12
2.3 Summary Page	16
2.4 Report Page	17
2.5 Read ECG	18
2.6 Monitoring Data	20
2.7 Tools Page	21
2.8 Settings – Programming	23
2.10 Settings – General	26
2.11 Settings – Label Printing	28

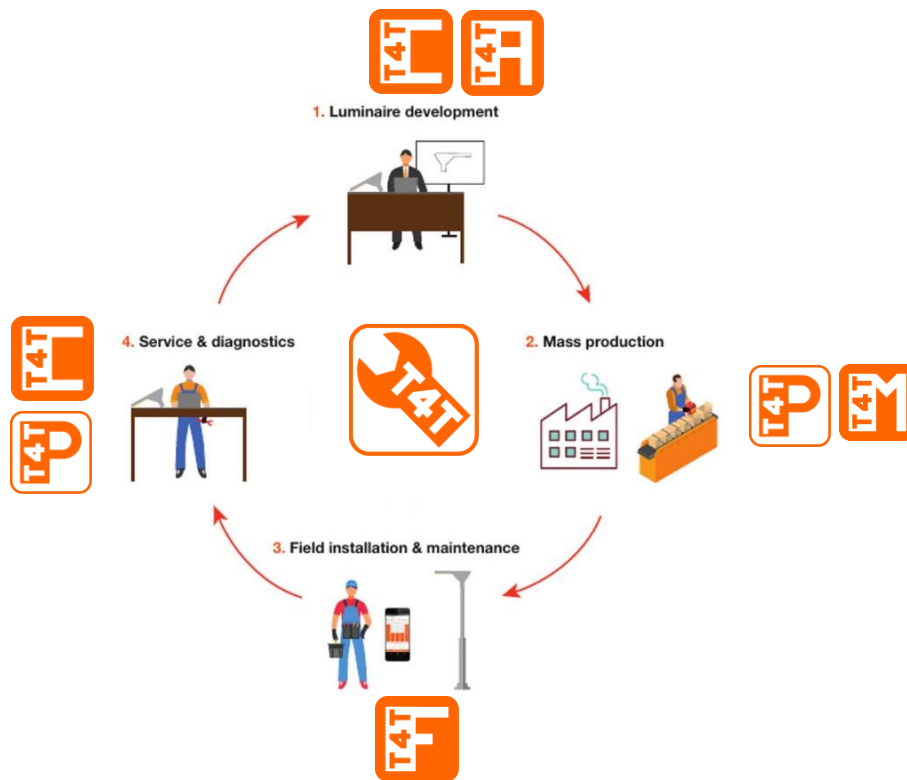
1 About Tuner4TRONIC

1.1 Purpose and Application

The Tuner4TRONIC (T4T) software suite allows luminaire manufacturers to program INVENTRONICS drivers via DALI and/or NFC in a simple, fast, reliable and cost-effective way, speeding up the production process.

Tuner4TRONIC tools can be downloaded from www.inventronics-light.com/tuner4tronic.

[Click here to watch a short video that gives a great overview about Tuner4TRONIC.](#)



The Tuner4TRONIC software suite consists of different modules according to the environment of use:



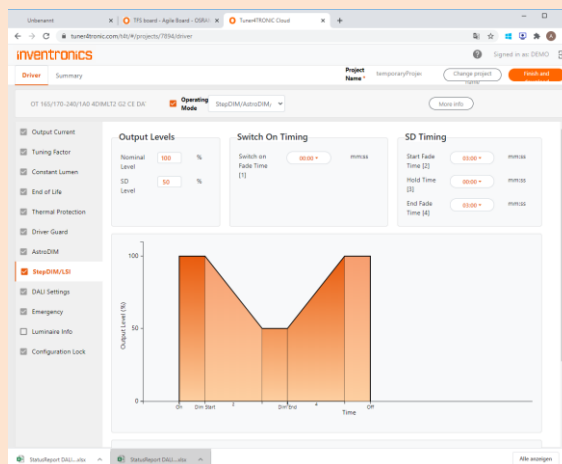
Tuner4TRONIC Configurator

This web based browser application enables luminaire designers to 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 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.

www.tuner4TRONIC.com

Same URL also provides a **Tuner4TRONIC TW LED Module Editor** to create settings for customized TW LED modules



Cold White CH1							
Module Temperature	Operating Current	Rated Voltage	Luminous Flux	Colour Coordinate x	Colour Coordinate y	Colour Temperature	
55 °C	300 mA	50 V	1050 lm	0.3221	0.3318	5000 K	

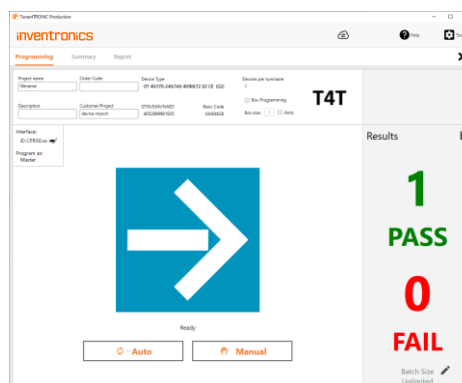
Warm White CH2							
Module Temperature	Operating Current	Rated Voltage	Luminous Flux	Colour Coordinate x	Colour Coordinate y	Colour Temperature	
55 °C	300 mA	50 V	1050 lm	0.4399	0.4055	2700 K	



Tuner4TRONIC Production

In luminaire production encrypted production files from the T4T-Configurator can be uploaded into the LED drivers for the fast mass production.

T4T Production also allows reading data from drivers (to be displayed and edited in T4T-Configurator)





Tuner4TRONIC Field

T4T-Field is an app for smartphones that can program INVENTRONICS outdoor as well as indoor LED drivers via NFC - wireless and without mains-voltage. The app trims light output, CLO and dimming profiles of the driver. T4T-Field also allows uploading production files created by T4T-Configurator and copy data from one driver to another for on-site replacement.

[Click here to download the app from Google Play \(Android version\)](#)

[Click here to download the app from the App Store \(iPhone version\)](#)

[Click here to download the dedicated manual for T4T-Field](#)



Tuner4TRONIC REST API

While the T4T-Configurator provides the users an intuitive graphical interface, the API („Application Programming Interface“) allows 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) standards and comes with comprehensive documentations.



Tuner4TRONIC Machine

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



T4T.DLL

1.2 Files Types

Tuner4TRONIC Development uses different file types:

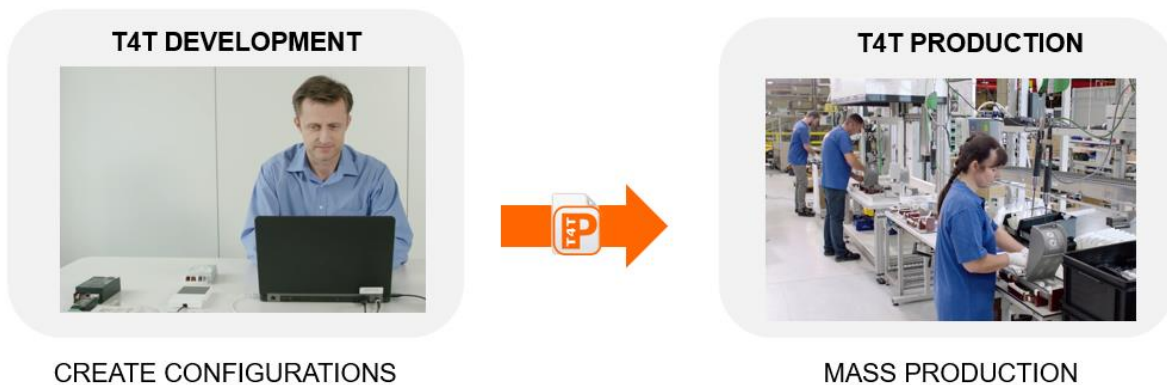
- Tuner4TRONIC production file = .osrtup
- Driver description file = .osrtud
- Driver data (readback) = .osrtur

1.3 Workflow between the different T4T Tools

The luminaire product designer creates his desired configuration (e.g. setting the operating current, CLO and dimming) using T4T Configurator. When the configuration is finished, he creates and downloads an read-only *.osrtup file that goes to T4T Production on the assembly line in mass production.

For testing and diagnostics, data can be read back from the driver by T4T Production and import the *.osrtur file for visualization in T4T Configurator

Our optional API allows to create luminaire and production files directly from an ERP system removing the need to create those files manually.



1.4 System Requirements



The minimum system requirements:

- 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 1024x768 pixels, the recommended zoom factor is 100%
- one free USB 2.0 port for Programming Interface

1.5 Programming Interfaces

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

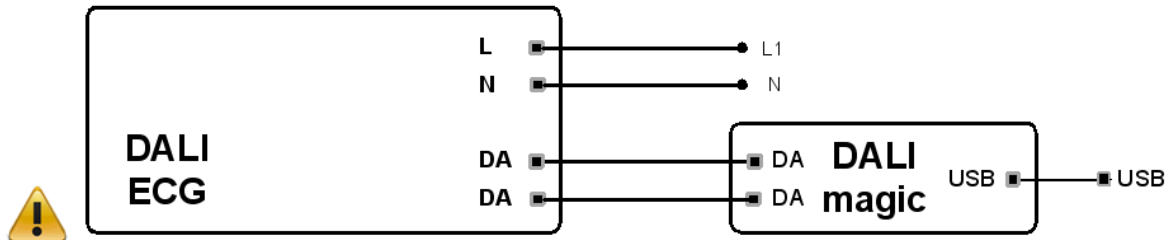
[1]	Driver with DALI interface (multi and/or single programming)	DALI Magic	
[2]	Driver with NFC interface	FEIG ISC.PR101	
		FEIG CPR30	
		FEIG ISC.MR102 (separate antenna ISC.ANT310/310 needed)	
		FEIG ISC.LR1002 (separate antenna ISC.ANT310/310 or ISC.ANT800/600 needed)	
	ID ECCO Smart HF.BLE FEIG order code: 5738.000.00		
	ID BLE USB-Dongle FEIG order code: 5903.000.00 required for BT connection w/ ECCO Smart		

[3]	Antenna with FEIG ISC.LR1002	FEIG ISC.ANT310/310	
[4]	Driver with Prog+/Prog- interface	OT Programmer (COM Box)	

Tuner4TRONIC Production is capable to handle more than one programming interfaces connected to the same PC

1.6 Preparing a driver with DALI interface for programming

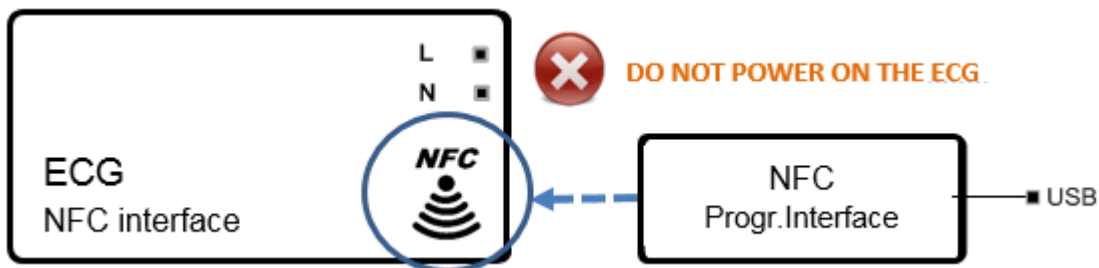
Step	Activity
1	Connect DALI magic and PC with the enclosed USB cable.
2	Connect the external 6V DC power supply to the DALI magic. The use of the external power supply is mandatory in case of more than 4 drivers connected to the DALI line, anyhow it is strongly recommended to always use the external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



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

1.7 Preparing a driver with NFC interface for programming

Step	Activity
1	Connect a NFC reader to the PC with the enclosed USB cable.
2	Place the driver (see logo on the driver) close to the NFC reader



Important Information:

Keep the driver powered OFF during programming via NFC unless otherwise indicated in the documentation of the driver. Keep both NFC reader and driver in close contact during the complete programming process.

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

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:

DO NOT POWER ON THE DRIVER! Programming of the driver via Prog+ and Prog- is NOT allowed when the driver is powered with mains on terminals L/N.

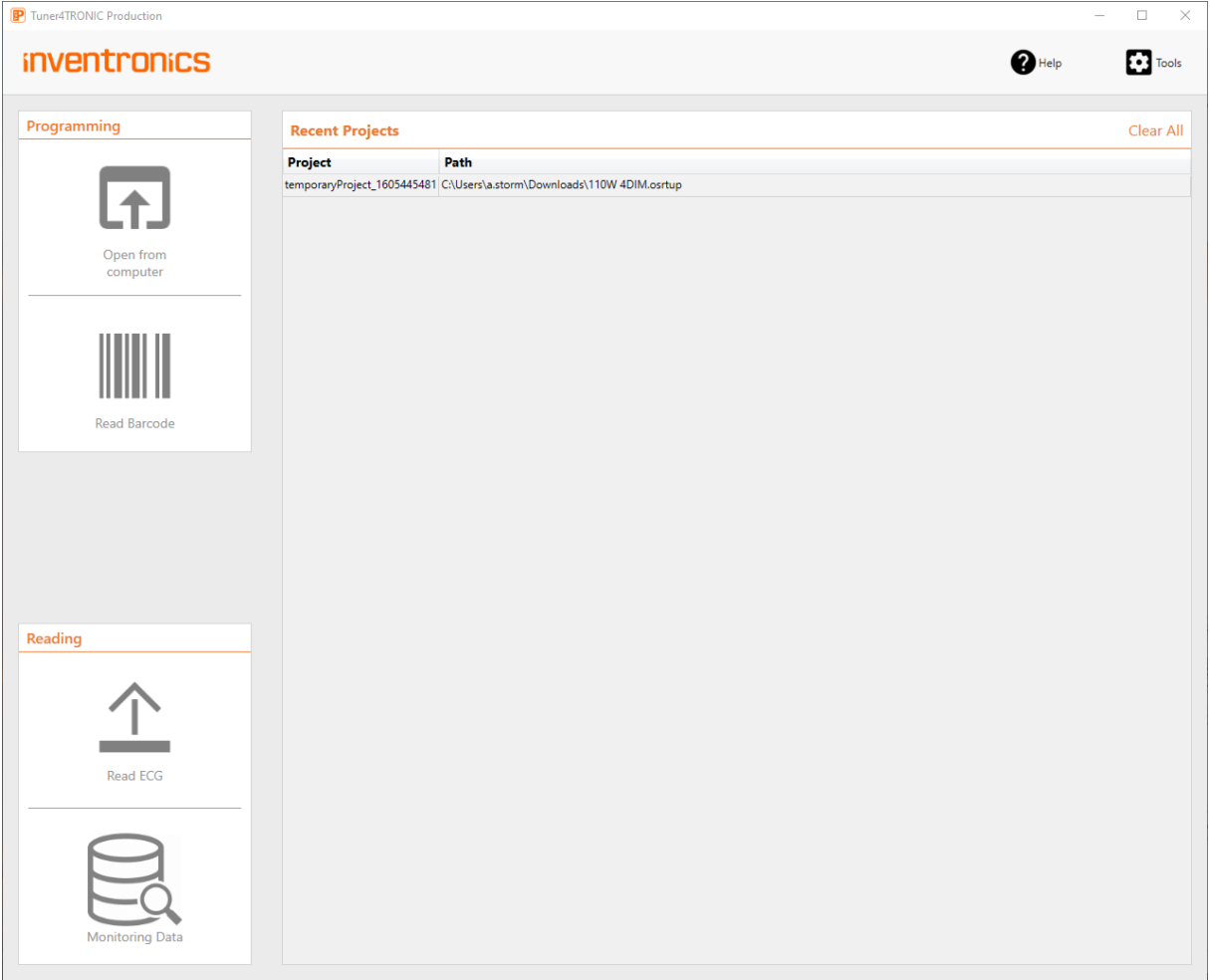
1.9 Software Installation

To install the file you must have Windows administrator rights. Extract the Tuner4TRONIC zip file into your local hard drive (use short path name, e.g. c:\temp) and then run "Install T4T.exe" located in that folder. **Running the Installer from inside the zip file will cause a faulty installation!**

Tuner4TRONIC Production can be launched from "Start" => => "Tuner4TRONIC 4" or by double-clicking the desktop icons.

2 Using T4T Production

2.1 Start Page



Open from computer Load an existing production file (*.osrtup). This file has been created by Tuner4TRONIC Cloud, Tuner4TRONIC API or Tuner4TRONIC Development. After selecting a production file, the program will switch to the programming page.

Recently loaded production files can also be loaded from the recent projects list by double click.

Read Barcode	Load production file from barcode
Read ECG	Read data from driver connected by a programming interface
Monitoring Data	Read and display Monitoring Data (PMD, D4i) from driver
Recent Projects	Load a production file from list of recently opened projects. List can be cleared by "Clear All"
Tools	Open tools page
Help	Open help and about pages

2.2 Programming Page

Tuner4TRONIC Production

inventronics

Help

Tools

Programming

Summary

Report

Project name

OT 110 4DIM

Order Code

Device Type

OT 110/170-240/1A0 4DIMLT2 G2 CE DATA (G2)

Devices per luminaire

1

Description

Customer/Project

GTIN/EAN

4052899981959

Basic Code

AM35339

☒ Box Programming

Box size:

10

Auto

T4T

Interface:

ID ISC.MR102

Program as:

Master

READY

Waiting for ECGs...

Auto

Manual

Results

10

PASS



0

FAIL

Batch Size

unlimited

For programming devices select “Programming” on the navigation bar

Project Data	Project related data, that has been loaded from production file is displayed and can be edited in the project data section
Devices per Luminaire	Shows the number of devices in the luminaire, that will be programmed. Data is received from loaded production file
Box Programming	<p>Select “Box Programming” to program drivers in the box via NFC. Box programming can only be activated after having selected a programming interface that is suitable for box programming</p> <p>If the driver is released for box programming, Auto checkbox will enter number of drivers by default. Default setting loaded from production file and can be edited. Programming will not start before number drivers detected matches the target number of drivers.</p> <p>In case of verification error on one or more drivers, all drivers will be marked as failed. In this case, the hole box must be programmed again. Reprogramming drivers that have been programmed with the same production file before will be overwritten in the report (no increment of the total number of passes)</p>
Detected Devices	Shows the number of detected drivers (displayed after pressing programming buttons)
Start Programming	<p>Programming is started by pressing either</p> <ul style="list-style-type: none"> — Manual: Programming drivers in one single luminaire or one box — Auto: Starts programming drivers after being connected to the programming interface. Auto mode continues until batch size is reached. In box programming mode, programming starts when number of identified drivers match the box size
Status	Programming status is indicated by a symbol (see table Programming Status Indicators), a completion bar and text message
Results	<p>The number of passed and failed programmings is displayed. The same driver may be programmed multiple times. Only the last pass/fail will be counted and logged in the production file. The programming log can be viewed in the “Report” tab.</p> <div>  <p>Press delete icon to delete the programming report in the production file and reset programming counter.</p> </div> <div>  <p>Press edit icon to edit the batch size</p> </div>
Interface	Display connected programming interface

Program as Display programming role defined in production file.

Master: Allows programming of all features (assuming, master key matches key in target device)

Service: Allows partial programming of features protected by service key (assuming, service key matches key in target device) and non-protected features

User: Allows partial programming of non-protected features

Additional
DALI
Options

Single driver programming: If DALI Magic has been selected as programming interface, a single driver compatible to the driver in the production file connected to the DALI line can be programmed and data from any single driver can be read out. If driver in production file does not match driver on the DALI line, T4T-P will execute family programming service (either online or from offline database). DALI address in the driver will follow settings in production file (either keep when disabled, unassign or assign new DALI address).

Batch programming: If multiple drivers are connected to the DALI line, all drivers compatible to the driver in the production file will be programmed. **DALI addresses will be deleted in the drivers after programming.** Programming from production files with DALI Addressing enabled will be rejected. T4T-P4 will execute family programming service.

Selective programming: “Selective Programming” can be enabled to program one or more specific drivers in a DALI installation identified by their DALI short addresses.

Press “Search” to search for drivers in the DALI installation. All compatible drivers will be highlighted in green, and the ones to program can be selected by checking the box. To find the luminaire in the installation, tick “blink” to let the luminaire blink.

Short addresses to program are separated by comma, ranges (e.g. “2-9”) are also accepted. DALI bus will be scanned before programming to avoid creating doubles.





Selective programming is rejected with drivers in multi-channel operating mode.



The cloud icon is displayed, online services are available (connected)

Online services allow automated updating of device description files with latest drivers from DD-store and notifications in case of T4T-P updates.

Programming Status Indicators

	Waiting for Luminaire	Connect a luminaire/driver(s) to start/continue programming.
	Programming in progress	Do not remove the connected luminaire/drivers(s) until programming process is completed.
	PASS	Programming process has completed successfully. Remove luminaire/drivers(s)
	FAIL	Programming process has stopped by user or due to errors. Fix the problem then start programming again. Check message on screen for further details.

2.3 Summary Page

inventronics

Programming **Summary** Report

Update (Cloud) Export Print

Feature	Parameter	Value
OTi DALI 20/220-240/500 NFC S	AM31177	
Operating Mode	Mode	DALI
Output Current	Current	Enabled 333 mA
Dim to Dark		Disabled
Tuning Factor		Enabled
	Min Limit	50 %
	Max Limit	100 %
	Reference Luminous Flux	0 lm
	Tuning Level (Light Output)	100 %
Constant Lumen		Disabled
	Output Level 8	100 %
	Operating Time 8	Off
	Operating Time 1	0 kh
	Output Level 1	70 %
	Output Level 2	100 %
	Operating Time 3	Off
	Output Level 3	100 %
	Operating Time 4	Off
	Output Level 4	100 %
	Operating Time 5	Off
	Output Level 5	100 %
	Operating Time 6	Off
	Output Level 6	100 %
	Operating Time 7	Off
	Output Level 7	100 %
	Operating Time 2	50 kh

For displaying list of parameters in production file select “Summary” on the navigation bar.

Update (Cloud) Press Update (Cloud) to convert values in report to clear text by using cloud services. Required, if data from production file **does not include report in clear text**

Export Press “Export” to create an html file with parameters

Print Press “Print” to print the list of parameters

2.4 Report Page

Tuner4TRONIC Production

inventronics

Help

Tools

Programming

Summary

Report

Export

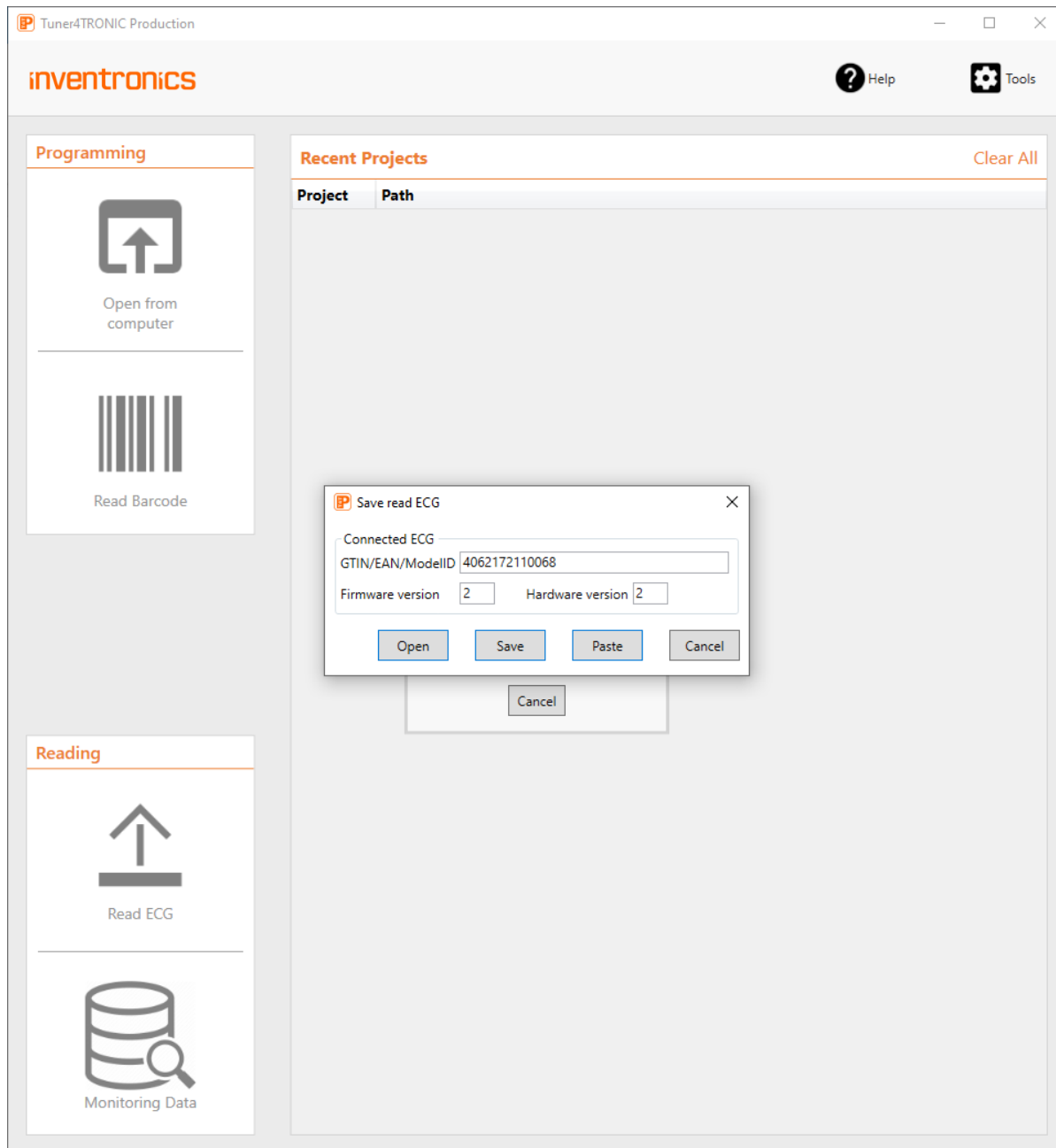
Print

ID	Device Name	Basic Code	Serial Number	Result
LUM1	OTI DALI 20/220-240/500 NFC S	AM31177	12774601631086018873	Passed
LUM1	OTI DALI 20/220-240/500 NFC S	AM31177	12793724337316299065	Passed

For displaying the programming report select “Report” on the navigation bar

Export	Press export to create an html reporting file. Each line represents programming result one driver, luminaire or box
Print	Press Print to print the report

2.5 Read ECG



After having pressed Read ECG button from the main page, T4T-P4 will read data from the driver connected via a programming interface (NFC, DALI, OT-Programmer). When DALI Magic has been selected as programming interface, a specific driver can be selected from the DALI network by entering its DALI short address.

A modal window will offer the following options:

Open	<p>Open T4T Configurator in a new tab in your standard browser and create a new project with data received from the driver.</p> <p>Please note, that the passwords are not copied when reading data from drivers. Instead, the encrypted master password is returned to indicate, that the driver is protected. PWs need to be re-entered when creating a production file.</p>
Save	<p>Save the readback file (*.osrtur) created from the data received from the driver on your local computer. This file can be imported in T4T-C for displaying data and creating new production files for programming. Saving readback files is useful, when T4T-P4 is offline.</p> <p>Please note, that the passwords are not copied when reading data from drivers. Instead, the encrypted master password is returned to indicate, that the driver is protected. PWs need to be re-entered when creating a production file.</p>
Paste	<p>Create new production file with data received from the driver and import in T4T-P4. This feature is useful to create clones when replacing drivers in luminaires. The paste feature uses cloud services and hence required access to internet-</p> <p>Please note, that the new production file includes PW (not visible to user) to unlock and protect new drivers</p>

2.6 Monitoring Data

Tuner4TRONIC Production

inventronics

HelpTools

Address: BroadcastRead ECGReset Failure ContentsAutomatic LogStop

TablePanelExport

Cluster	Name	Value	Unit	
-- ECG S/N: 72623859790382856 --				
Integrated Bus Power Supply	Guaranteed Supply Current	53	mA	
	Maximum supply current	62	mA	
	Supply Enable	True		
Active Energy and Power	Active Energy	51.3	Wh	
	Active Power	N/A	W	
Apparent Energy and Power	Apparent Energy	64	VAh	
	Apparent Power	N/A	VA	
Load Side Energy and Power	Active Load Energy	42.2	Wh	
	Active Load Power	N/A	W	
Control Gear Diagnostics and Maintenance	Operating Time	4:13	hh:mm	
	Start Counter	183		
	Supply Voltage	N/A	Vrms	
	Supply Voltage Frequency	N/A	Hz	
	Power Factor	N/A		
	Control Gear Failure	N/A		
	Control Gear Failure Counter	N/I		
	External Supply Undervoltage	N/A		
	External Supply Undervoltage Counter	N/I		
	External Supply Overvoltage	N/A		
	External Supply Overvoltage Counter	0		
	Output Power Limitation	N/A		
	Control Gear Power Limitation Counter	N/I		
	Thermal Derating	N/A		
	Thermal Derating Counter	N/I		
	Thermal Shutdown	N/A		
	Thermal Shutdown Counter	N/I		
	Temperature	N/A	°C	
	Output Current Percent	0		
Light Source Diagnostics and Maintenance	Start Counter - Resettable	102		E R
	Start Counter	51		
	On Time - Resettable	1000:00	hh:mm	E R
	On Time	1:59	hh:mm	
	Light Source Voltage	N/A	V	

Address

If programming interface DALI magic is selected, broadcast will read the one and only driver connected to the DALI network. If more than on driver is connected, a specific driver on a DALI network can be selected by DALI short address.

Read ECG

Press “Read ECG” to read content of Monitoring Data from driver connected via the selected programming interface.

Resettables

Press “E” to edit values



Press “R” or to reset

Changes will be be affective after next driver power on

Automatic Log

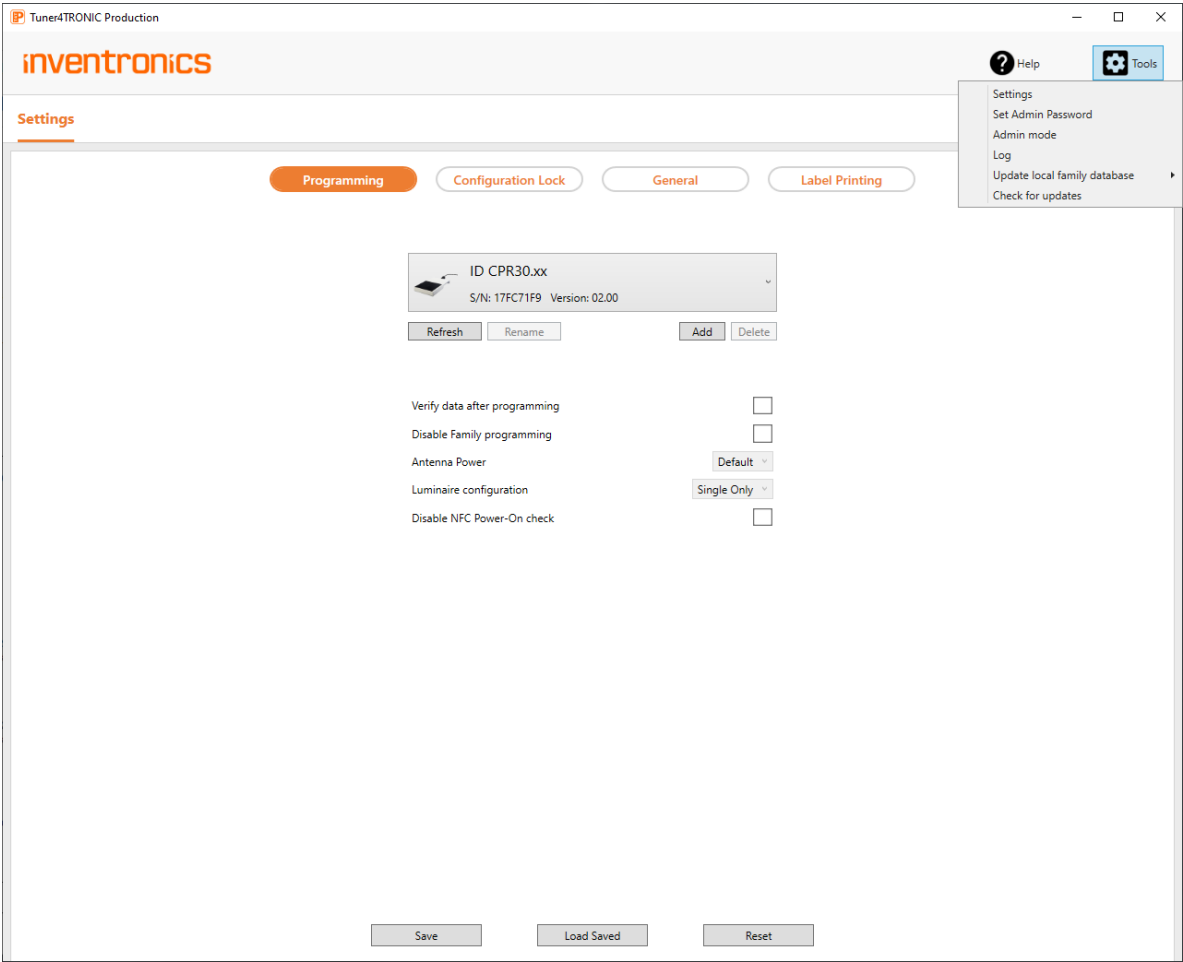
Reads Monitoring Data recurrently from driver and logs data

Stop

Stop reading Monitoring Data

Table	Select “Table” for table data view
Panel	Select “Panel” for panel data view
Export	Press “Export” to create an html file with parameters

2.7 Tools Page



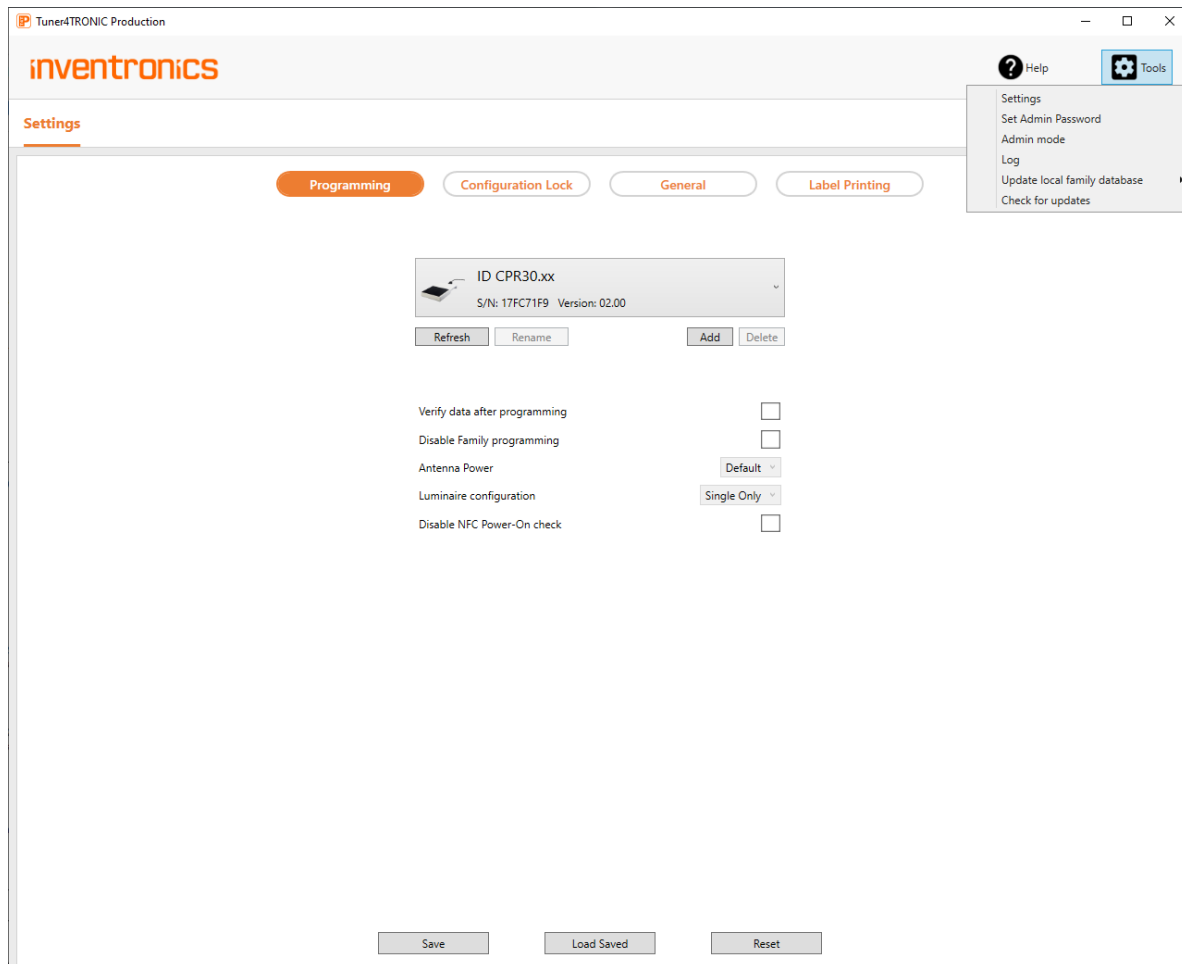
Press Tools and select tools from drop down list

Settings: see Settings page

Set Admin Password	Enter or delete password to use T4T-P in admin mode
--------------------	---

Admin Mode	Toggle Admin Mode on/off. If admin mode is activated, production file cannot be reloaded and project data cannot be edited
Log	View log for debugging purposes. Press right mouse on log window to export csv log file
Update local family database	Updates database for family programming – either from cloud or from local zip file, if no internet connection. Zip file can be downloaded from https://www.inventronics-light.com/tuner4tronic → Software Downloads
Check for updates	Select “Check for Updates” to check for new T4T-P versions from download center

2.8 Settings – Programming



Select Tools/Settings and press Programming to select programming options

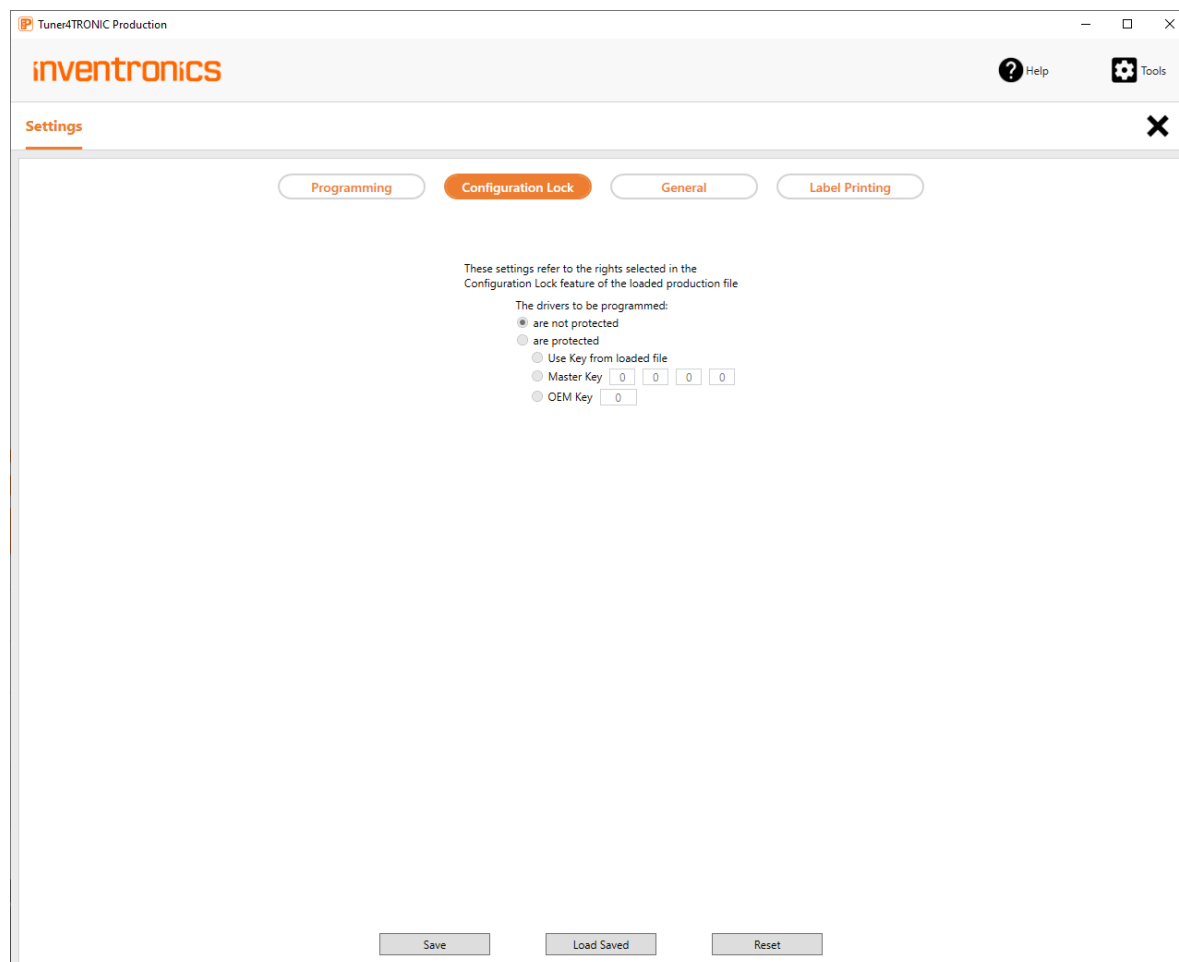
Save Save options on local computer and in production file where applicable. If settings have not been saved, any changes will be ignored when restarting T4T-P

Load Saved Load options from local computer and from production file where applicable

Reset Reset options to factory settings and to data from production file where applicable

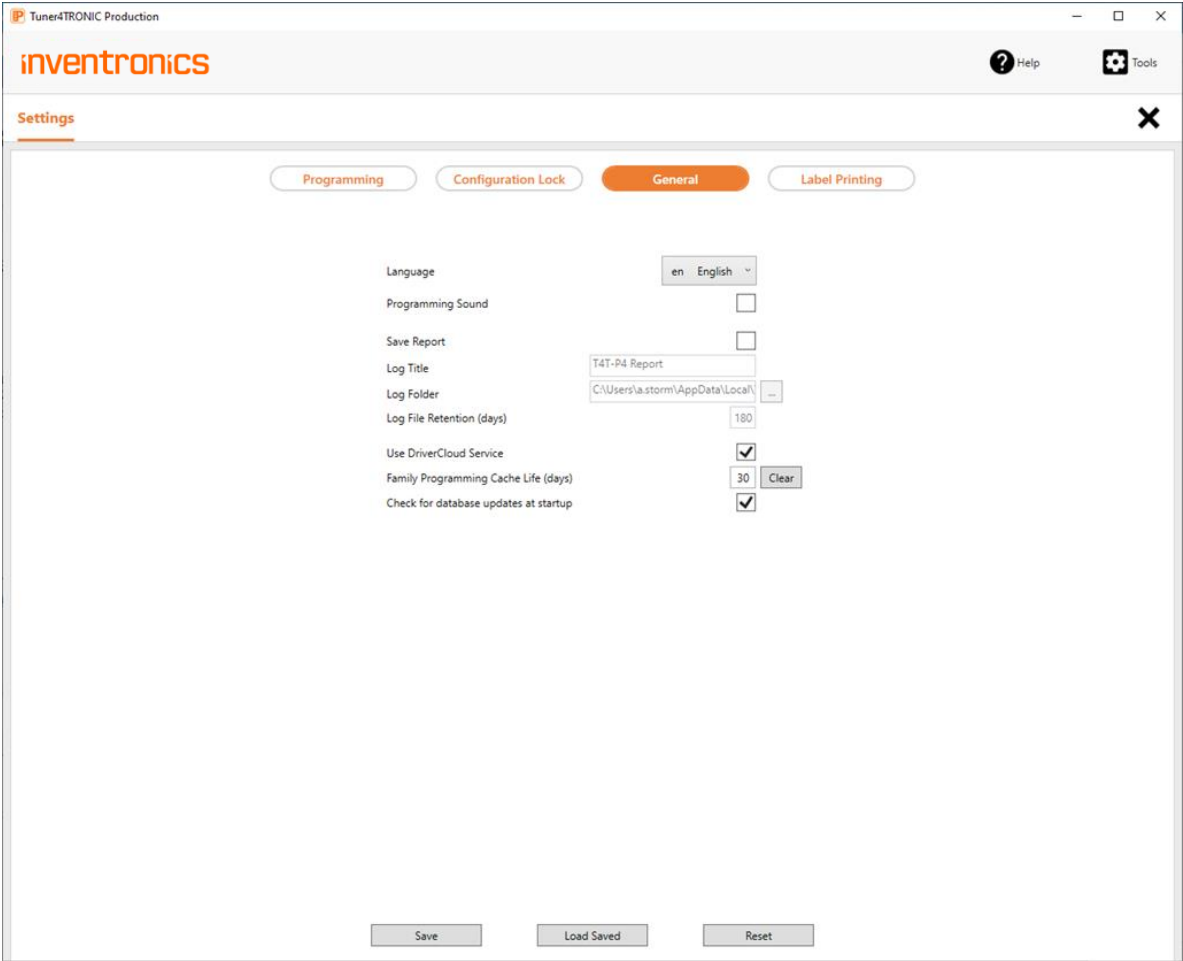
Select programming interface	<p>Select programming interface from drop-down list. Make sure that the programming interface is connected and not used by other tools. Press Refresh to refresh list of programming interfaces.</p> <p>For programming interfaces, that use a COM port (e.g. OT Programmer, Feig ECCO w/ BT dongle), press “Add”, scan COM ports by pressing the Detect button, select a device and assign an name and finally press the Add button to add the programming interface to the drop down list. Once installed as described before, the programming interface will be available on the drop down list also after closing and reopening the application.</p>
Verify data after programming	Select verify data after programming, if you want to verify data after each programming automatically. Default is set from production file.
Disable Family programming	<p>Family programming allows programming drivers of the same driver family and drivers from the next generation with the loaded production file. Family programming does not allow programming drivers from previous driver generations (no backwards compatibility).</p> <p>Select disable family programming to reject programming of any drivers other than the one specified in the production file. Default is set from production file.</p> <p>Family programming is a cloud service. If no internet connection available or cloud service is deactivated, family programming service installed with T4T-P4 locally on the computer will be used. Please ensure, that local service is updated any time. Please use updated features data base update from tools menu to update local family programming service.</p>
Antenna Power	Select antenna power to adapt power to specific setup
Luminaire Configuration	Select single programming or multiple programming. Multiple programming allows programming multiple drivers connected via DALI (test rack application or multiple drivers in one luminaire). Default setting is derived from production file.
Disable NFC Power-On check	<p>In general, T4T-P4 does not allow programming drivers that are connected to mains, since NFC data might get corrupted. In worst case, T4T-P4 may acknowledge programming, though data has not been programmed correctly. To avoid this failure, LED drivers set a power-on flag in the NFC tag to communicate to T4T-P4, that the LED driver is powered. T4T-P4 will then reject NFC programming.</p> <p>Due to a recent bug in LED driver production, the power-on flag has been set in some production lots by mistake, though the driver is not physically connected to mains. LED drivers can be repaired by disabling NFC power-on check. In this case, the user needs to ensure, that the driver is not powered, since there is no check in T4T-P4. Therefore, this option should not be used by default.</p>

2.9 Settings – Configuration Lock



Select Tools/Settings and press Configuration Lock to overwrite password settings defined in the production file to allow programming protected drivers. Master Key is used in drivers with two level PW protection. OEM key is used in drivers with single level PW protection.

2.10 Settings – General



Select Tools/Settings and press General edit general parameters

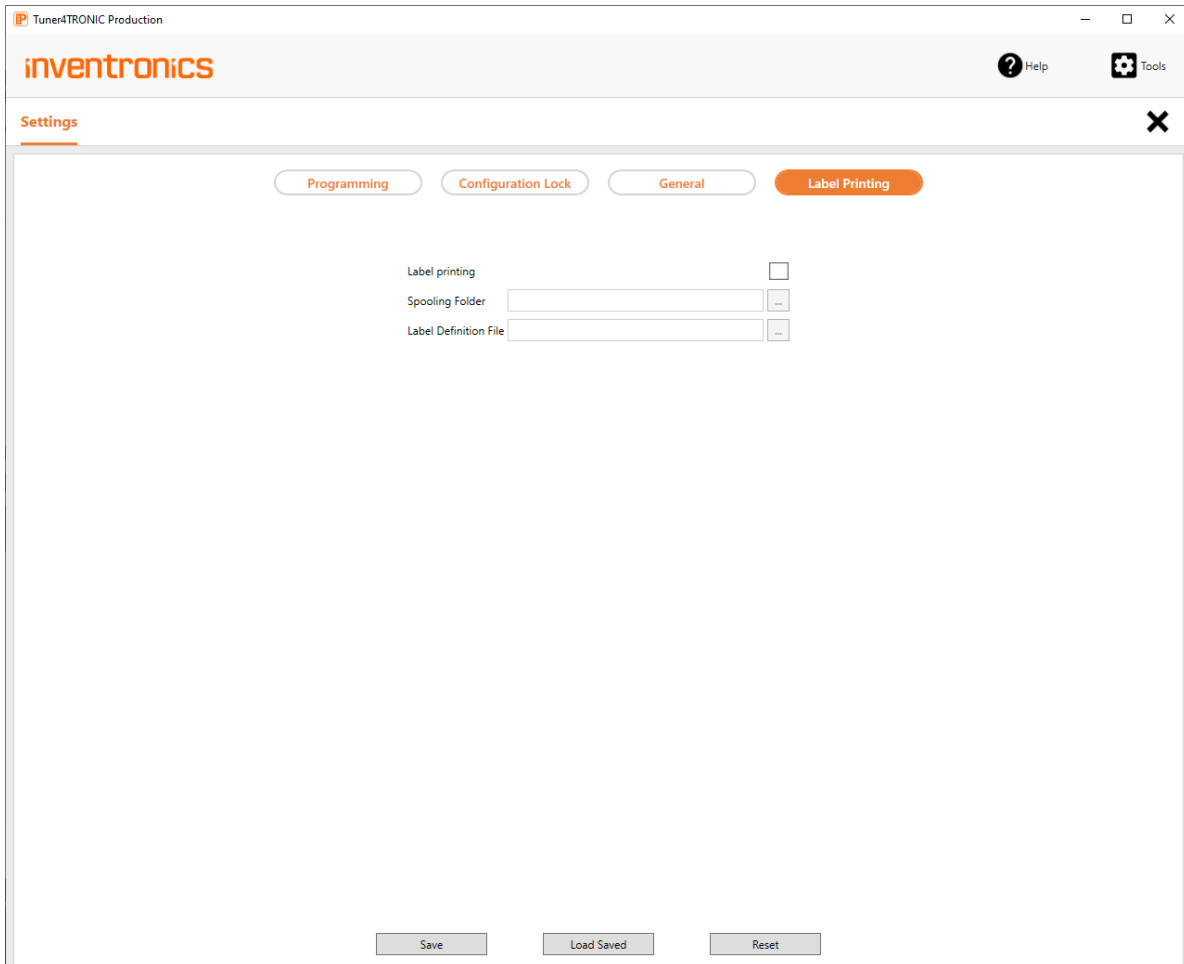
Programming Makes a sound after each programming sound

Logging Creates HTML programming log files (title and folder below)

Log Files Retention (days) Deletes log files after expiry period to free memory on local computer

Cloud Service	Enables access to cloud services, e.g. used for <ul style="list-style-type: none">— family programming— automated data base updates for family programming in offline mode— T4T update notification— creating report files in clear text— driver registry
Family programming cache	Deletes cached family programming files after expiry period to free memory on local computer
Check for database updates at startup	If ticked, T4T-P will check for data base updates at each startup

2.11 Settings – Label Printing



The screenshot displays the 'Tuner4TRONIC Production' software window. The top bar includes the 'inventronics' logo, a 'Help' icon, and a 'Tools' icon. Below this, the 'Settings' tab is active, and the 'Label Printing' sub-tab is selected. The main content area contains three settings: 'Label printing' with a checkbox, 'Spooling Folder' with a text input field and a browse button, and 'Label Definition File' with a text input field and a browse button. At the bottom, there are three buttons: 'Save', 'Load Saved', and 'Reset'.

Select Tools/Settings and press Label Printing enable/disable label printing and define file name and spooling folder for labels.

If a local folder is selected as Spooling folder, a csv file is created and overwritten with each programming.

When label printing is enabled w/ box programming, one label per driver will be created (i.e. 20 labels for a box of 20 pcs)

INVENTRONICS GmbH

Parkring 31-33
85748 Garching, Germany
Phone +49 89 6213-0
www.inventronics-light.com

Tuner4TRONIC support: T4Tsupport@inventronicsglobal.com

inventronics