Programmable LED Driver Configuration Tool User Manual

Please send feedback or ask support questions by emailing software@erp-power.com

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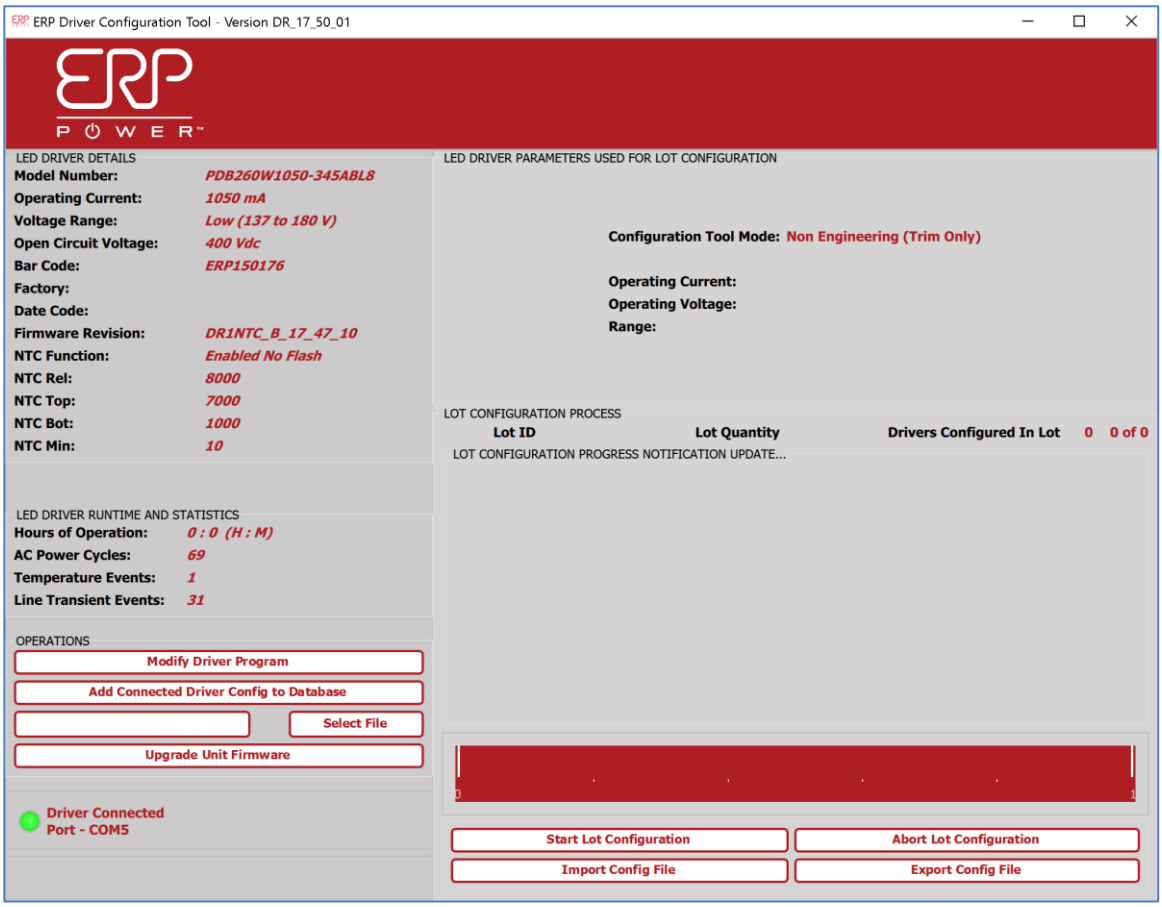
INTRODUCTION

The CDB/PDB/PSB Series of LED drivers from ERP Power offer programmable outputs and dimming, allowing the drivers to perfectly serve specific, and varied, application requirements. This is achieved using an innovative set of user accessible configuration parameters, before, during or after, the time of deployment.

THE TOOL



ERP Power provides a versatile, and easy to use piece of software called the, “ERP LED Driver Configuration Tool”, also referred to as, “The Customer GUI” (Graphical User Interface), along with a programming cable, “PROG-JACK-USB” assembly, to read from and configure ERP programmable LED drivers. The Customer GUI is available from ERP as a computer desktop application that runs on the Microsoft® Windows® 7 or greater operating system. The Customer GUI provides a Graphical User Interface, for connecting to, configuring and reading from, all ERP programmable LED drivers.

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The PROG-JACK-USB cable, provided for configuring ERP Power programmable LED drivers, uses a USB port to connect to a computer, and a proprietary barrel jack connector, to interface with the programmable LED driver. Power is supplied by the PROG-JACK-USB cable, thus allowing the user to configure a driver, without the need to apply AC power to the driver and power it up. It is also safe to use the PROG-JACK-USB cable, on a driver currently powered by AC, and to power up a driver with AC, even if a cable is already plugged into the driver, prior to the application of power. Every PROG-JACK-USB cable includes inside of it, an EMI filtering choke and a self-resetting current fuse, to protect the user's computer in the event of a fault or transient event on the driver.

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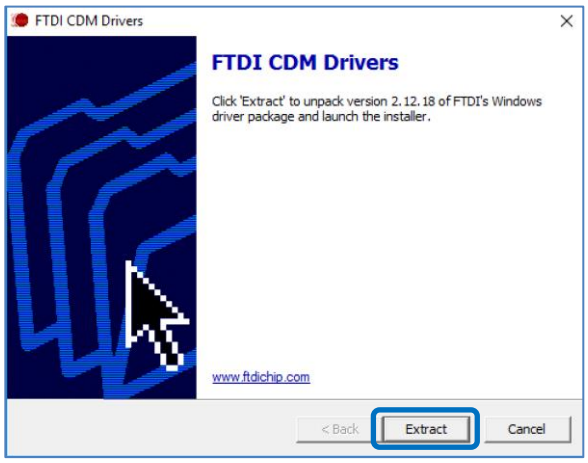
ERP LED DRIVER CONFIGURATION TOOL INSTALLATION

1.1. REQUIRED DRIVERS AND FILES

Before downloading and installing the latest version of the ERP LED Driver Configuration Tool, please ensure any previous versions have been uninstalled.

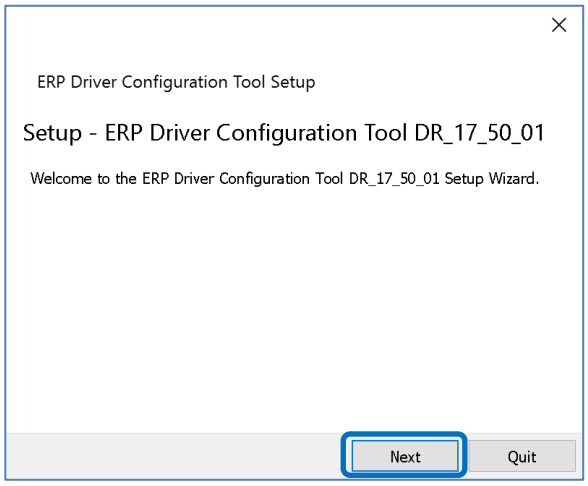
If this is the first time you are installing the ERP LED Driver Configuration Tool onto your computer, also download and install the driver software for the PROG-JACK-USB, either supplied with the Customer GUI software by ERP, or downloaded directly from the following website: http://www.ftdichip.com/Drivers/VCP.htm

To install the PROG-JACK-USB drivers, simply download, extract and install the driver setup file.



1.2. INSTALLATION

Launch the ERP Driver Configuration Tool setup file, and click **Next:**



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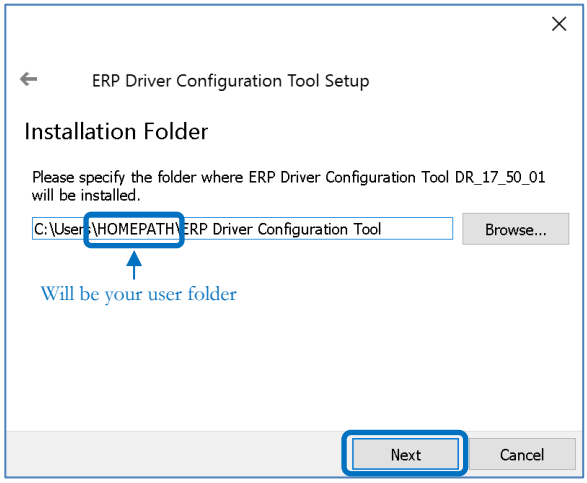
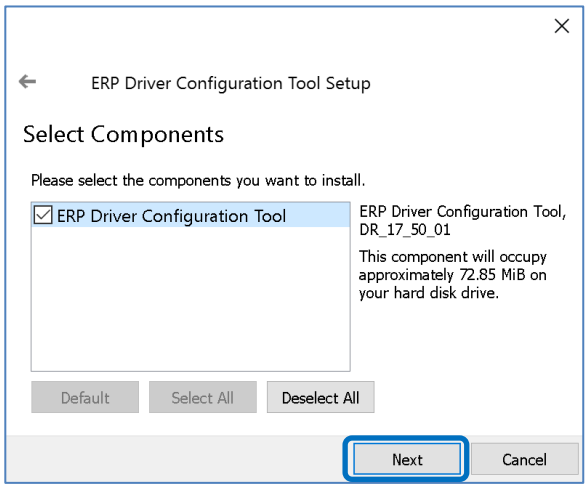
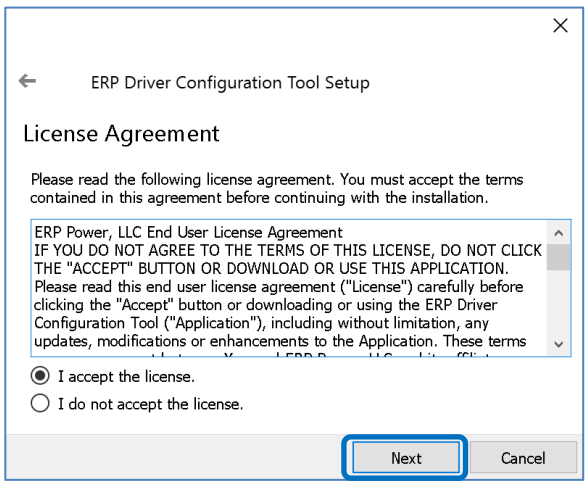
Specify the installation directory and click Next, the default location is: “%HOMEPATH%\ERP Driver Configuration Tool”:



Click **Next** on the following screen, ensuring “ERP Driver Configuration Tool” is checked:



Read through, and accept the license terms, if you wish to continue with the installation:



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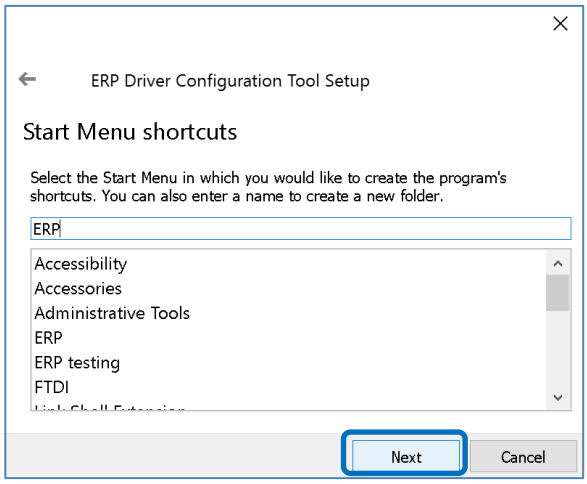
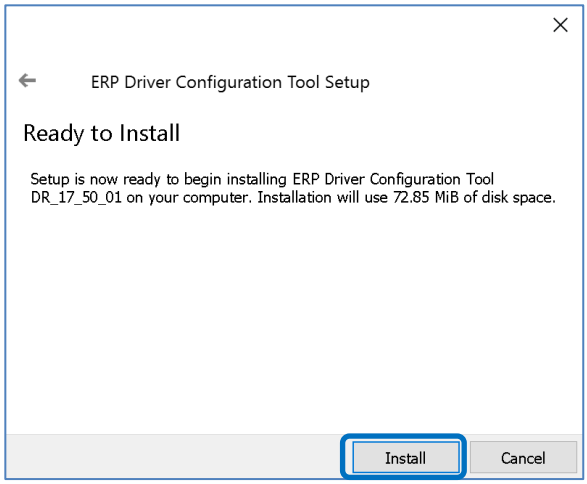
Specify the Start Menu shortcut folder name, the default is “ERP Power”, then click **Next**:



Finally, click **Install**:



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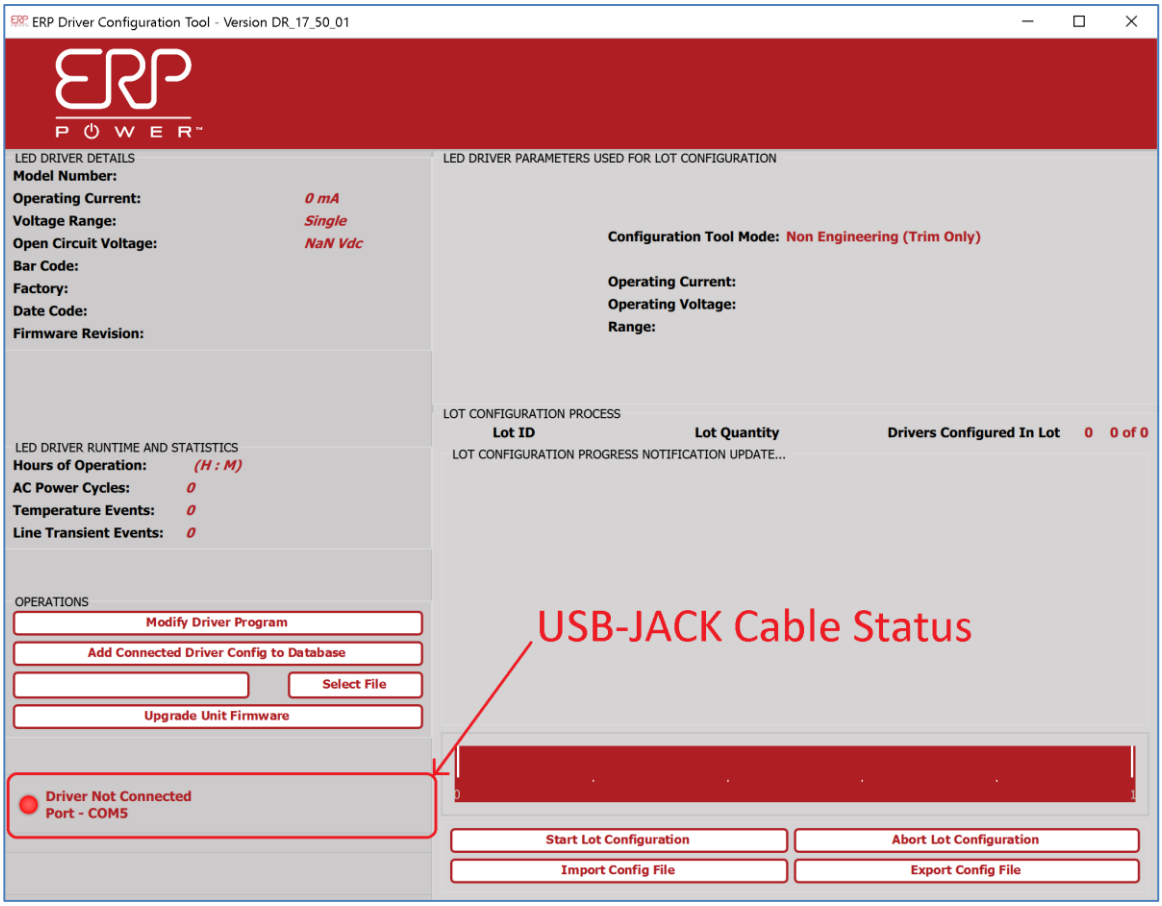
READING A PROGRAMMABLE LED DRIVER

2.1. CONNECTING THE PROGRAMMING CABLE

Ensure that the PROG-JACK-USB programming cable is connected to your computer. To verify that the cable is properly installed, launch the ERP Driver Configuration Tool.



In the lower left portion of the screen, the PROG-JACK-USB cable status is listed. A Grey circle indicates no PROG-JACK-USB cable was found; a Red circle indicates a cable was found, but no driver is connected; a Green circle indicates a cable was found and a driver is connected.

If a PROG-JACK-USB cable is not found, please ensure that the latest cable drivers are installed, and that no other additional instances of the ERP Driver Configuration Tool are concurrently running.

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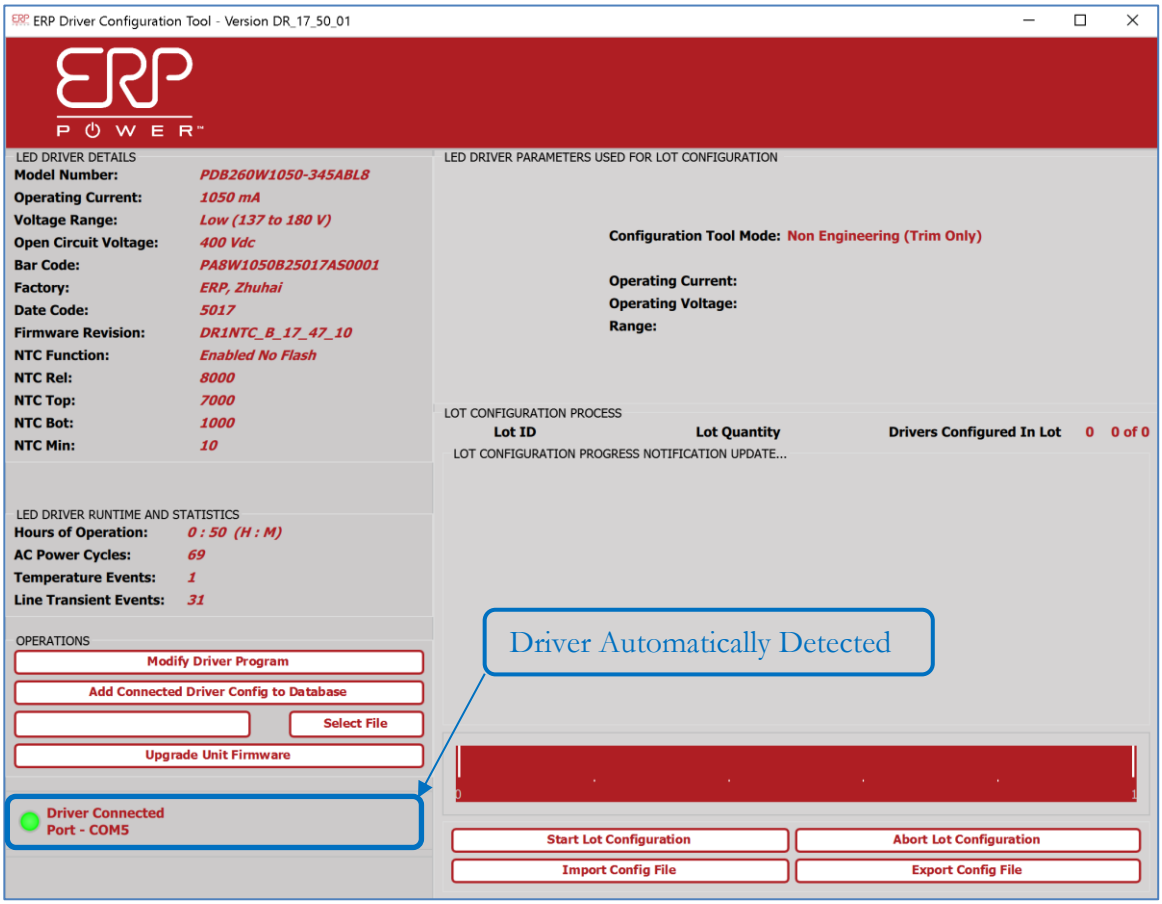
2.2. READING A DRIVER

Insert the PROG-JACK-USB cable into an ERP Power programmable LED Driver.

The ERP Driver Configuration Tool will automatically detect the connected driver, and read the stored configuration in the driver.



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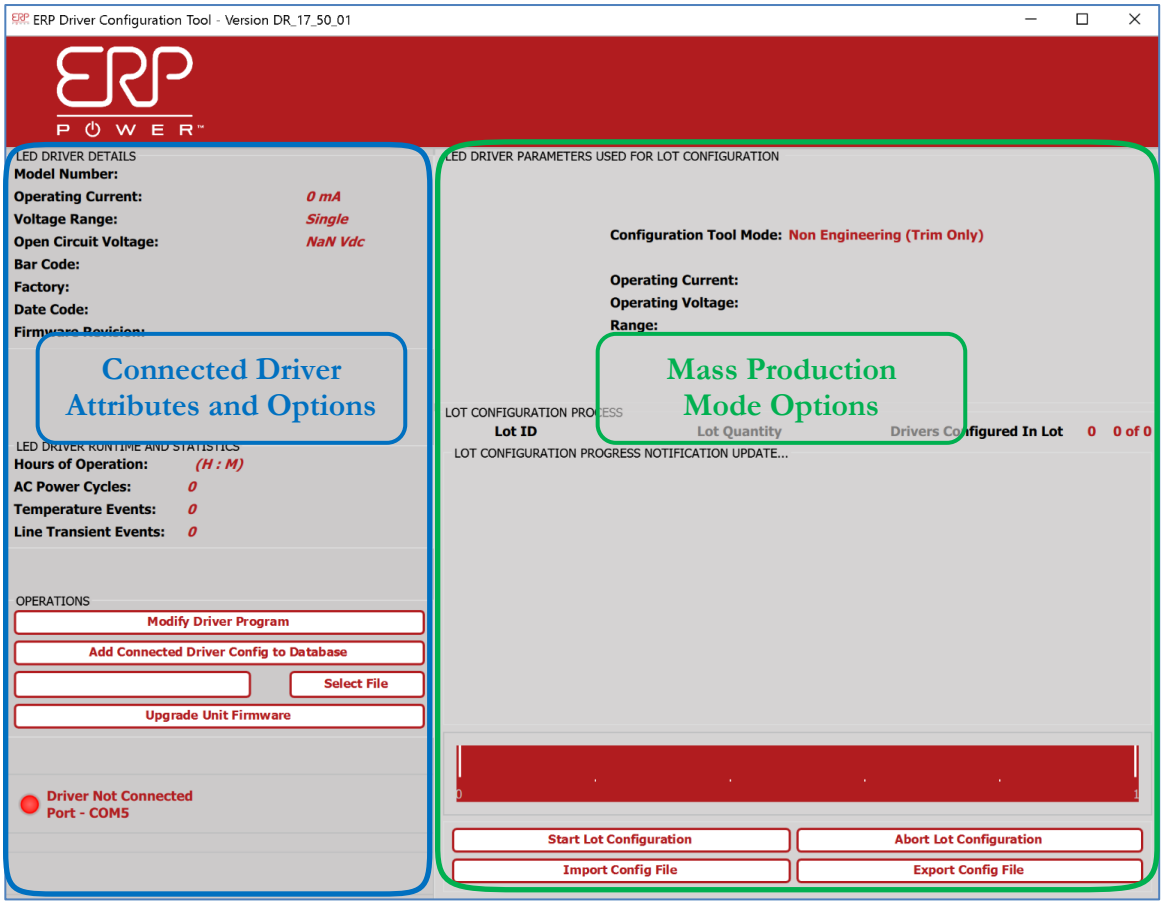
DRIVER CONFIGURATION WINDOW

3.1. CONFIGURATION TOOL LAYOUT

The main window on the ERP Driver Configuration Tool is divided into two portions: the left half displays the connected ERP Power programmable driver configuration attributes currently stored in that connected driver, while the right half shows the configuration settings which will be sent to the programmable driver, and also contains the Lot Configuration (Mass Production) settings.

If there is no ERP Power programmable LED driver currently connected, the left-hand information panel will be blank.



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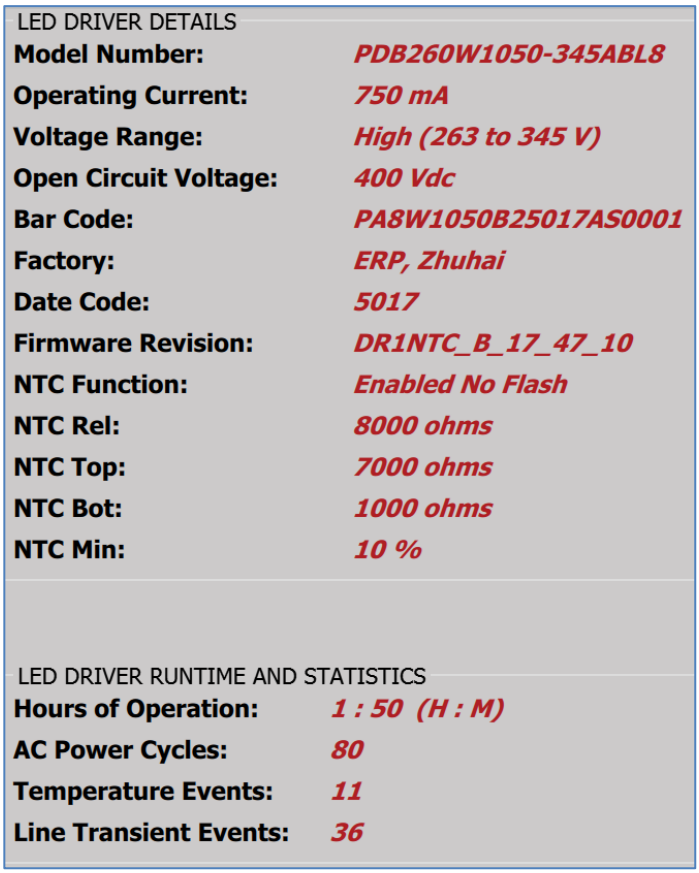
3.1 INFORMATION PANEL LAYOUT

Here is a brief a description of each of the status fields that show up when an ERP Power programmable driver is plugged in. Note that some options may or may not be present, depending on the available parameters for the particular programmable driver connected to the computer…



- **Model Number:** ERP part number (or customer SKU) programmed into the unit
- **Operating Current:** This is the configured output current
- **Operating Voltage:** This is the maximum operating voltage
- **Open Circuit Voltage:** This is the maximum voltage output if the driver is not connected to an LED load
- **Bar Code:** Unit serial number
- **Factory:** Origin manufacturing factory
- **Date Code:** The date of manufacture (WWYY - week# and year#)
- **Firmware Revision:** The version of firmware inside the driver
- **NTC Function (optional):** The configured functionality of the external NTC protection
- **NTC Rel (optional):** The release threshold in ohms, for the external NTC functionality.
- **NTC Top (optional):** The top trigger threshold in ohms, for the external NTC functionality.
- **NTC Bot (optional):** The bottom trigger threshold in ohms, for the external NTC functionality.
- **NTC Min (optional):** The minimum output level, in percentage, that the external NTC functionality will throttle down to.
- **Hours of Operation:** Total time the supply has been powered (HH:MM), 10-minute intervals
- **AC Power Cycles:** Total number of times the supply has been powered up
- **Temperature Events:** Number of times the supply temperature has exceeded a threshold.
  Note: Temperature thresholds vary by product (~90°C typ.)
- **Line Transient Events:** Cumulative number of line transients or output short circuit events, seen during operation

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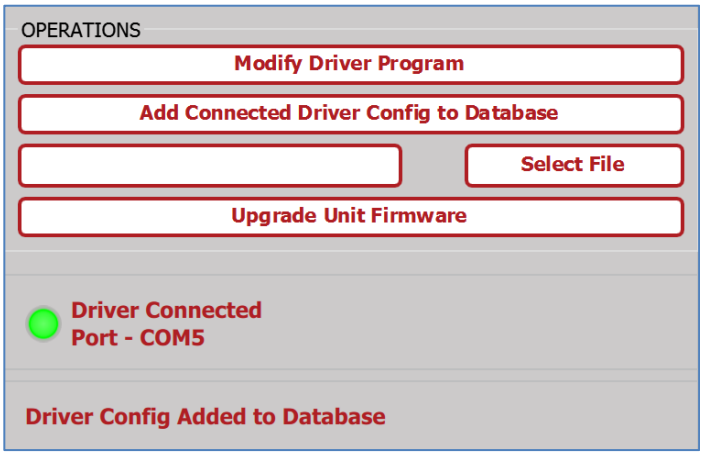
3.2. TRIM PANEL LAYOUT

Configuring (or trimming) and updating firmware for an individual driver is handled in the "Operations" area of the Customer GUI. Once a driver is connected to the computer, its configuration parameters can also be added to the internal database stored within the ERP Driver Configuration Tool. From top to bottom, here is a brief description of each of the buttons and fields available:



- **Modify Driver Program:** Allows the user to adjust the output current, voltage range and NTC functions of the connected driver
- **Add Connected Driver Config to Database:** Adds the configuration attributes, of the connected driver, into the local database, stored within the ERP Driver Configuration Tool, for later use
- **Select File:** Used for selecting the firmware file, to be used to update the connected driver
- **Upgrade Unit Firmware:** Begins the firmware updating process, using the firmware file selected
- **Cable Connection Status:** Gives the status of the PROG-JACK-USB cable, and whether or not a programmable driver is connected. Grey signifies no cable was found, Red means a cable was found, and Green means a driver was found and read from
- **Information Panel:** Informs the user of actions performed by the Customer GUI, such as adding a driver configuration to the internal Database

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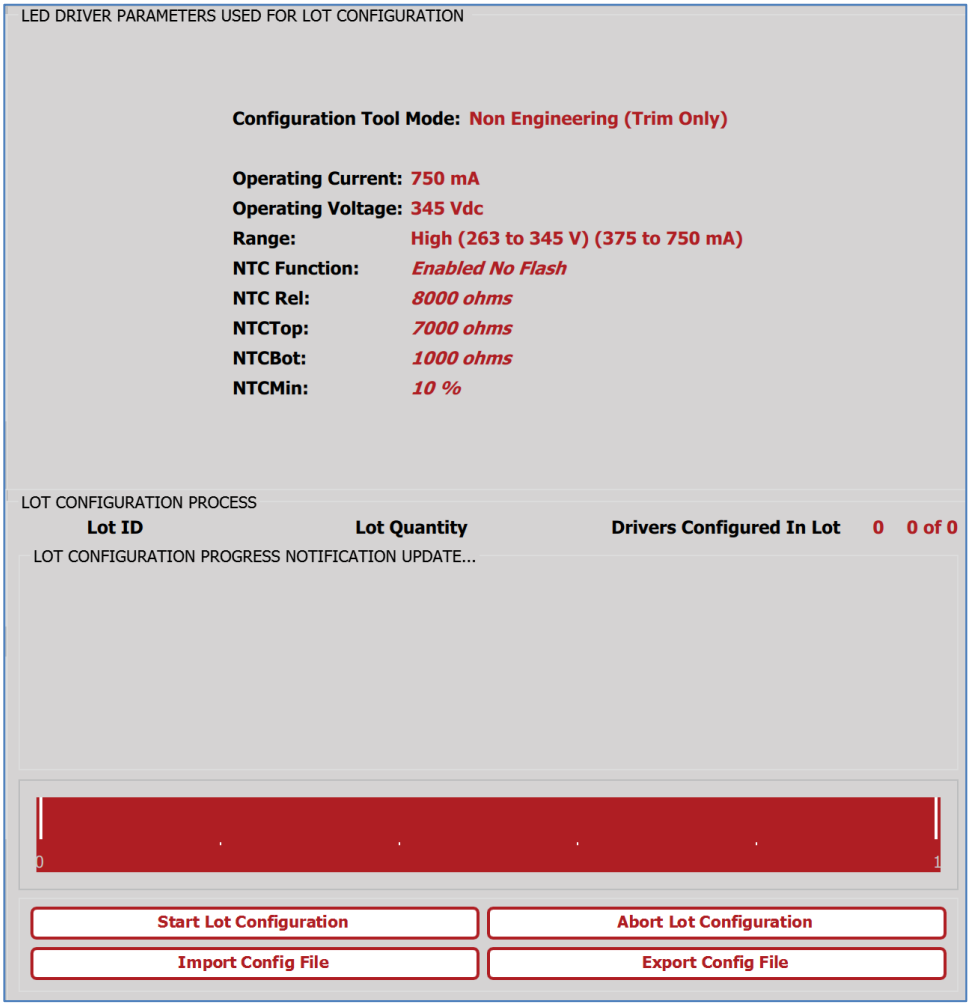
3.2 LOT CONFIGURATION PANEL



The Lot (Group) Configuration Panel displays relevant information and buttons, used for mass configuring multiple programmable drivers in a sequence, with a chosen configuration.

- **LED Driver Parameters Used for Lot Configuration panel**: Displays the relevant settings that will be used to configure an individual or a large lot (group) of drivers
- **Lot Configuration Process**: Displays the ongoing status of an in-progress lot of drivers being configured
- **Lot Configuration Progress Notification Update**: Shows the user the required next step during the driver lot configuration
- **Start Lot Configuration**: Brings up the lot configuration window, allowing the user to configure and begin the lot configuration process
- **Abort Lot Configuration**: Allows the user to abort, or cancel, an in-progress lot configuration
- **Import Config File**: Will prompt the user with an add file dialogue, allowing the user to import a database config file, for different driver configurations
- **Export Config File**: Opens a save file dialogue box, allowing the user to share the driver configurations, stored within their ERP Driver Configuration Tool's internal database

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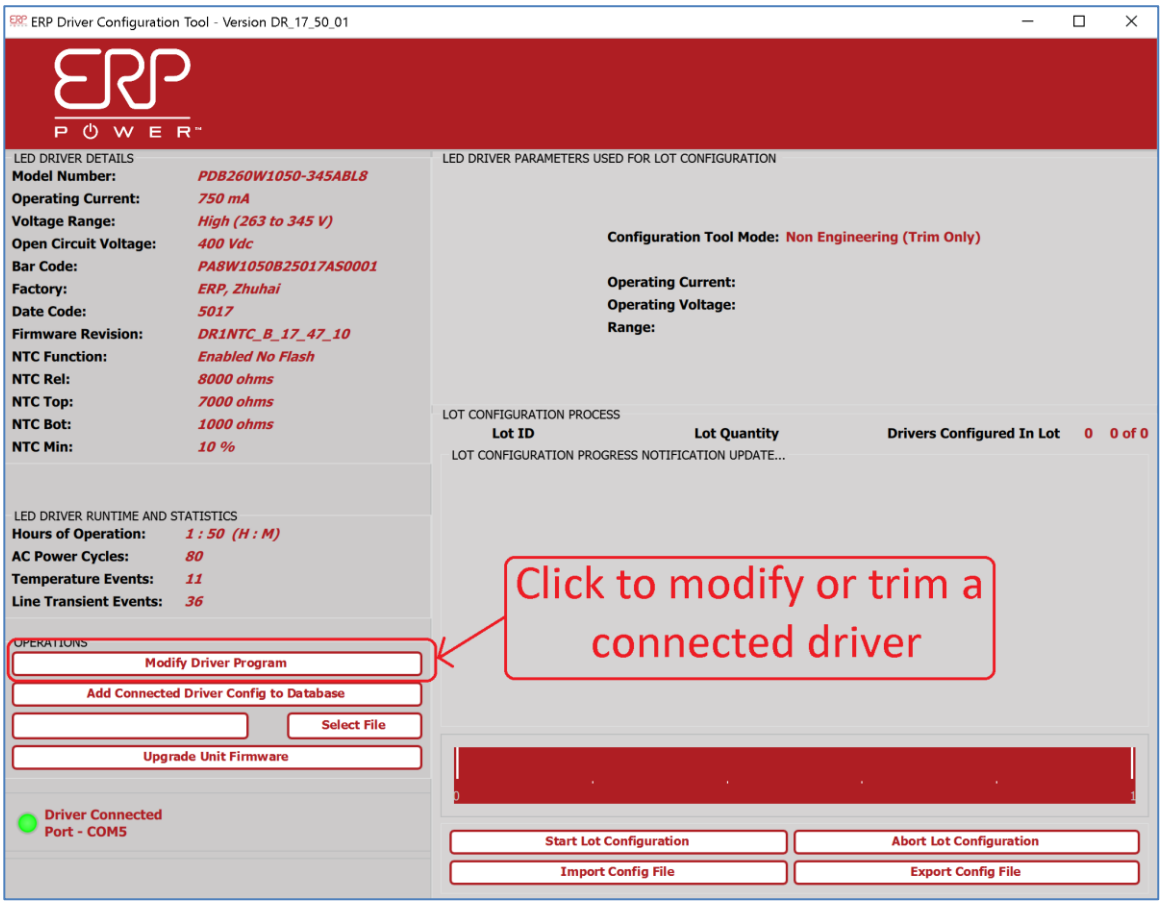
CONFIGURING PROGRAMMABLE DRIVERS

4.1. TRIMMING A DRIVER

Trimming, or modifying the programmed settings of an individual driver is a simple and straight forward process. To begin, ensure an ERP Power programmable driver is connected to your computer, then press the **Modify Driver Program** button.

Please Note: Output current **can** be modified on a driver currently powered with AC, however, **do not** attempt to alter the output voltage range on a driver currently powered with AC.



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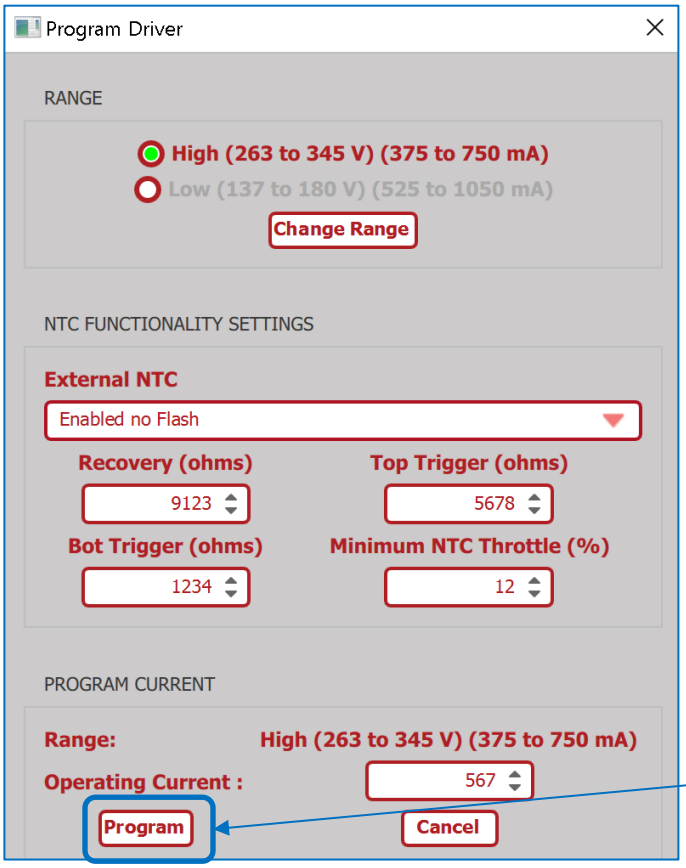
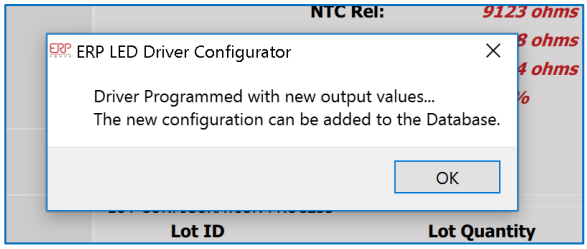
After pressing the **Modify Driver Program** button, a new window will popup, the **Program Driver** dialogue box. Several attributes are available for configuration from this dialogue. Some options may or not be present, depending on the particular ERP Power programmable LED driver model currently being modified:



- **Range:** Alters the output voltage range on dual range drivers
- **NTC Functionality Settings:** Allows the external NTC (negative temperature coefficient) function to be enabled or disabled, and modify the transfer function points for drivers with optional external NTC capabilities. See **Section 5.1** for more details on configuring the external NTC functionality
- **Program Current:** Displays the available output current minimum and maximum values available for a particular voltage range, and allows the user to specify an operating current within those limits

Press to Send Entered Attributes to Connected Driver.

After entering in the new attributes to be sent to the driver, press the **Program** button. A confirmation window will appear, confirming that the new settings have been sent, and stored in the driver.



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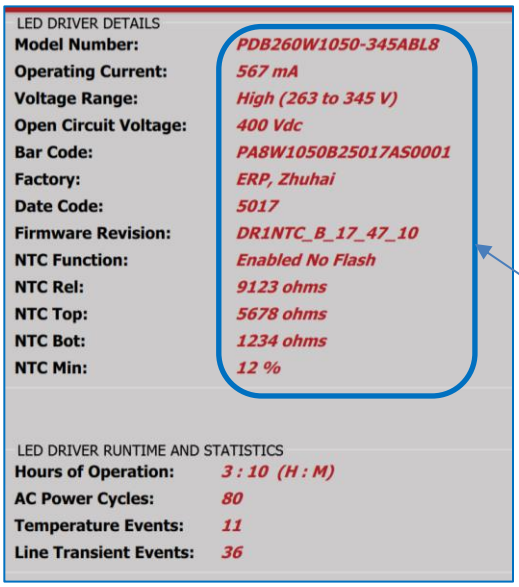
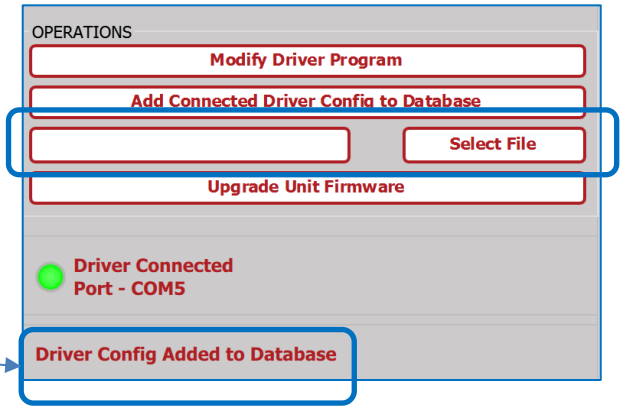


After dismissing the confirmation box (press **OK),** the Customer GUI will read back from the driver, further confirming, that the new settings have been saved and stored inside the driver.

Driver Attributes Match Settings from Program Driver Screen

If desired the new programmed attributes can be added into the internal database for later use, by pressing the **Add Connected Driver Config to Database** button.



Notification Field, Confirms Driver Config Has Been

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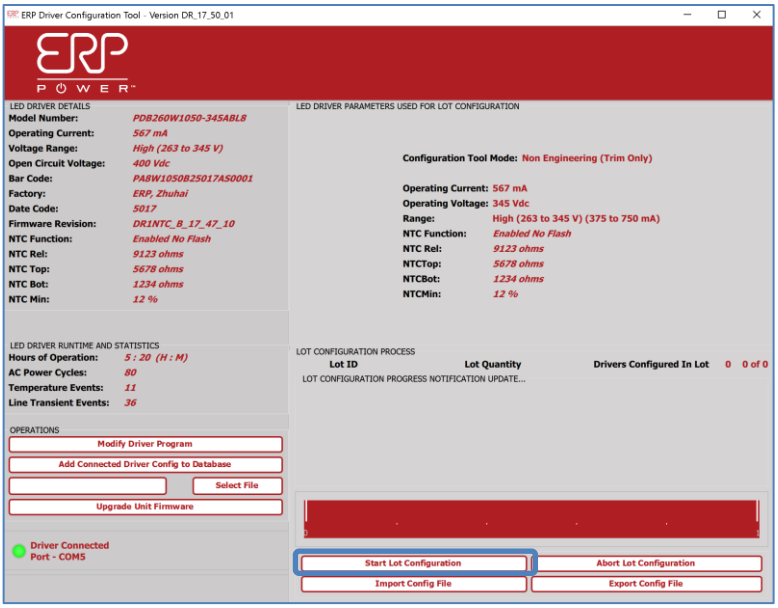
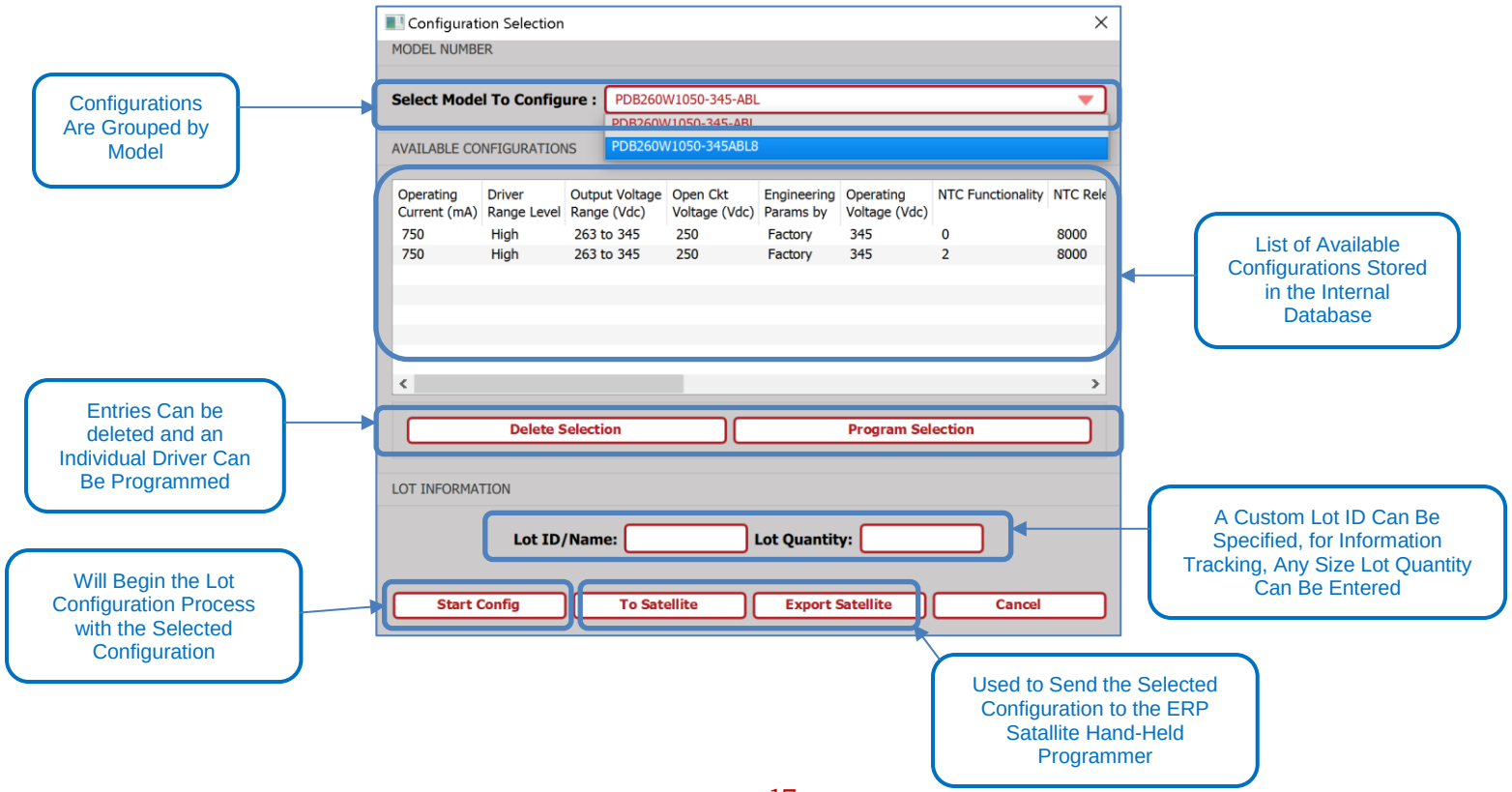
4.2. MASS PRODUCTION MODE



The ERP Driver Configuration Tool also allows a large lot (group) of drivers to be configured for a production environment. This mode of configuration makes use of the internal database within the Configuration Tool. To program and configure a large quantity of drivers based upon predefined configurations, either previously imported into the Configuration Tool or added using the **Add Connected Driver Config to Database** button. To launch the production mode, press the **Start Lot Configuration** button. Below is a breakdown of the options available in production mode.



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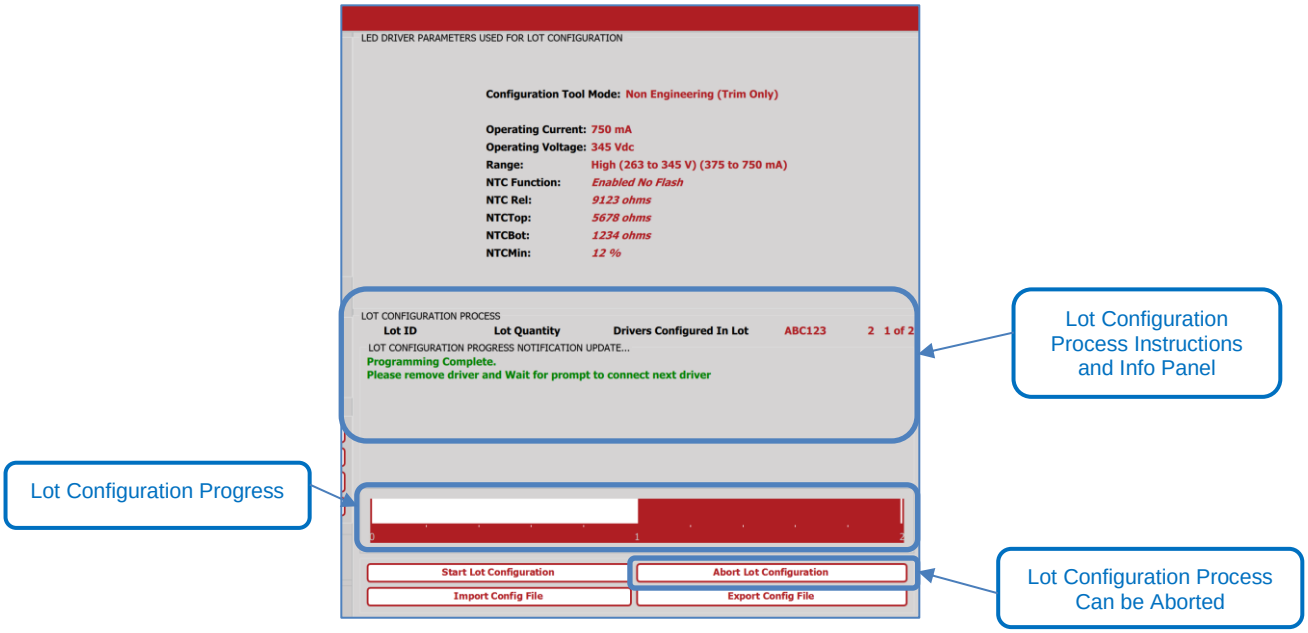
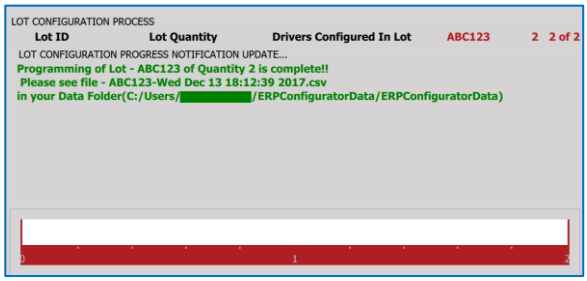
After selecting from the list, the relevant model and desired configuration, the desired **Lot ID/Name** and **Lot Quantity** can be entered. **Lot ID** is used for information tracking; after completing a lot, a .csv file is generated with the **Lot ID**, recording the number of drivers programmed, their serial numbers and configuration used. **Lot Quantities** can be specified in any number between 1 to 64,000. Press the **Start Config** button to begin the Lot Configuration Process.



The Lot Configuration Process keeps track of the number of drivers programmed and how many drivers are left to be programmed, using a progress bar. A visual and audio prompt indicates when a driver has been successfully programmed and when it is time to connect the next driver. A notification is also given when the process is complete, notifying the user where the .csv file was saved, recording the Lot Configuration Process.



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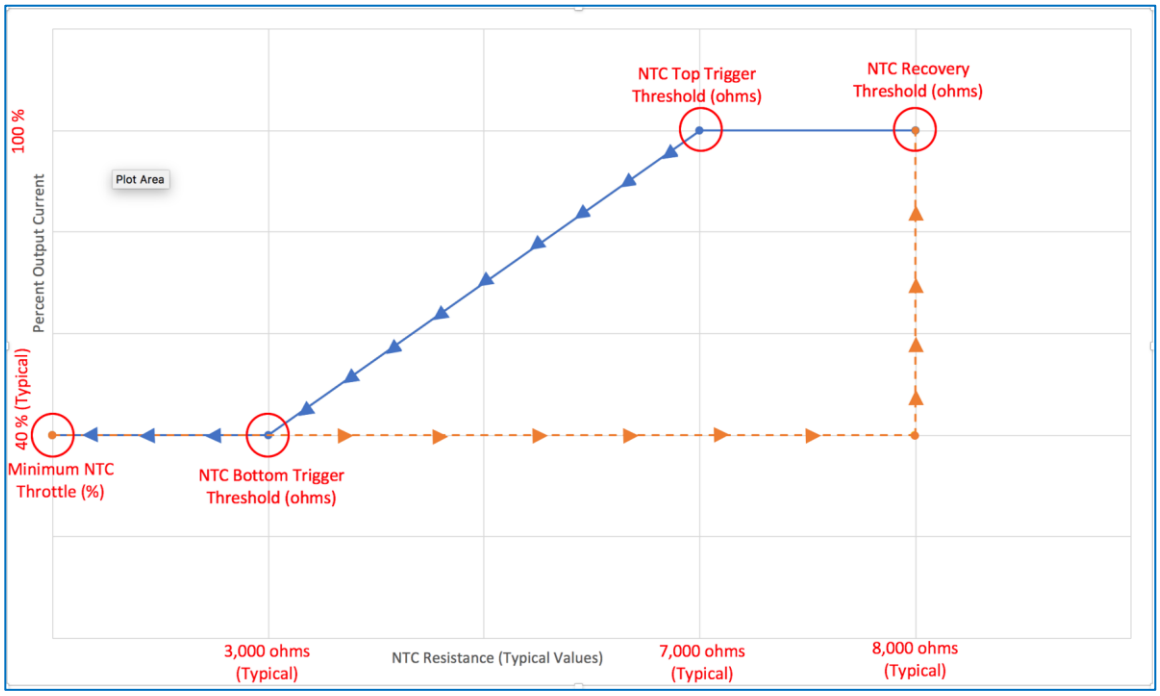
(OPTIONAL) EXTERNAL NTC PROTECTION

5.1. OVERVIEW

Select ERP Power programmable LED driver models have the capability of accepting inputs, from an externally located negative temperature coefficient (NTC) thermistor, to use as an extra level of protection for the LED fixture. The NTC inputs, are used to signal to the driver, that the location being monitored, is too hot, and thus the output current must be throttled down. The transfer function for output current vs. NTC resistance is entirely user configurable. See below graph, showing the linear shape of the transfer function, and the circled points, which are the user configurable attributes, defining the transfer function.



From the graph, the configurable parameters are:

- **NTC Recovery Threshold**: In ohms, this specifies the point at which normal operation will be restored.
- **NTC Top Trigger Threshold**: In ohms, this specifies when output current throttling will begin.
- **NTC Bottom Trigger Threshold**: In ohms, this specifies the resistance when the minimum specified output current is reached. Used to define the slope of the transfer function curve.
- **Minimum NTC Throttle**: In percentage of output current, specifies the lowest level, the NTC function will throttle down to.

Note, the direction of the arrows in the graph. Once the **NTC Top Trigger Threshold** has been crossed, output current will only go down in value, until the **NTC Recovery Threshold** has been crossed. This hysteresis ensures, that normal operation will only be restored, after the NTC has had adequate time to cool off.

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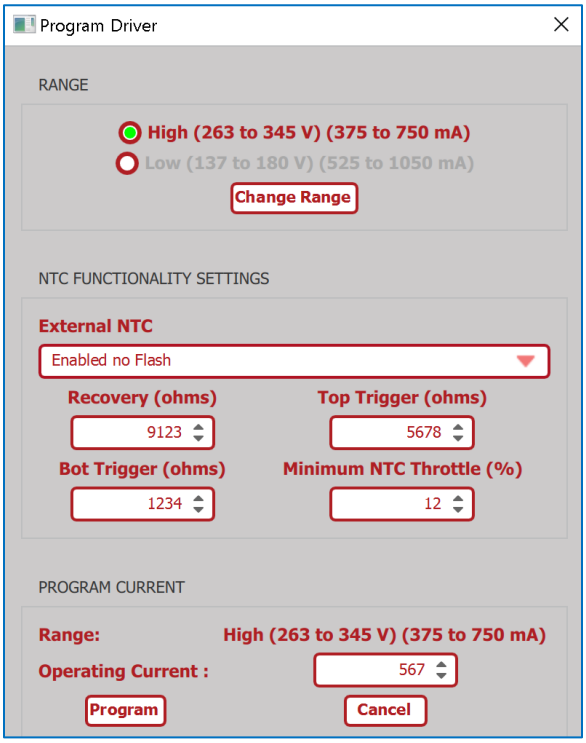
5.2. CONFIGURING THE EXTERNAL NTC FUNCTIONALITY

To configure the External NTC Functionality, repeat the same steps as in the **Trimming a Driver** section. Simply open the ERP Driver Configuration Tool, connect an ERP Power programmable driver which supports the External NTC function, and click the **Modify Driver Program** button.

The following NTC settings, based on the transfer function graph in **Section 5.1,** can be configured from the **Program Driver** window:



- **External NTC**: Can be set to:
  - **Disabled:** Disables all NTC related functions.
  - **Enabled no Flash:** Enables the NTC Functionality as defined by the transfer function.
  - **Enabled with Flash:** Enables the NTC functionality, and will blink the fixture LEDs up and down every few minutes if the NTC Top Trigger Threshold has been crossed, in addition to following the NTC Transfer Function.
- **Recovery:** Specifies the **NTC Recovery Threshold** in ohms. Acceptable values range from 200-15,000 ohms. **Recovery must be greater in value than Top Trigger or Bot Trigger.**
- **Top Trigger:** Specifies the **NTC Top Trigger Threshold** in ohms. Acceptable values range from 200-15,000 ohms. **Top Trigger must be greater than or equal to in value as Bot Trigger.**
- **Bot Trigger:** Specifies the **NTC Bottom Trigger Threshold** in ohms. Acceptable values range from 200-15,000 ohms.
- **Minimum NTC Throttle**: Specifies the bottom floor the NTC Function will dim down to. Acceptable values range from 1-100 %.

Once the desired values have been entered, simply press the **Program** button to configure the connected driver. Afterwards, the selected values can be added into the ERP Driver Configuration Tool's internal database, using the **Add Connected Driver Config to Database** button.

Technical Support and Feedback:
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