arkalumen | apt
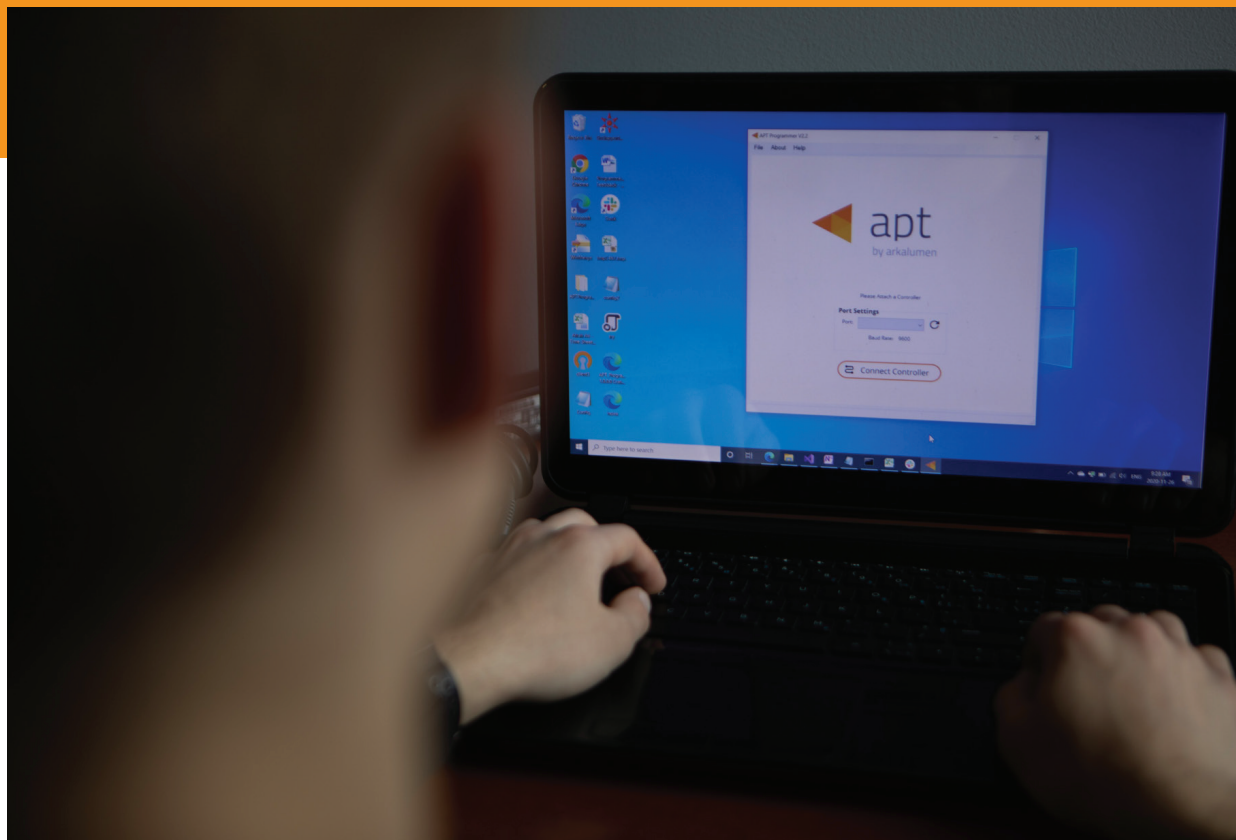
APT Programmer
Programming Guide – Engineering
APT-CV2-VC-LN-CVO

Table of Contents

Connecting the APT Programmer

① Connect the APT Programmer to the PC and controller as shown in Figure 1.
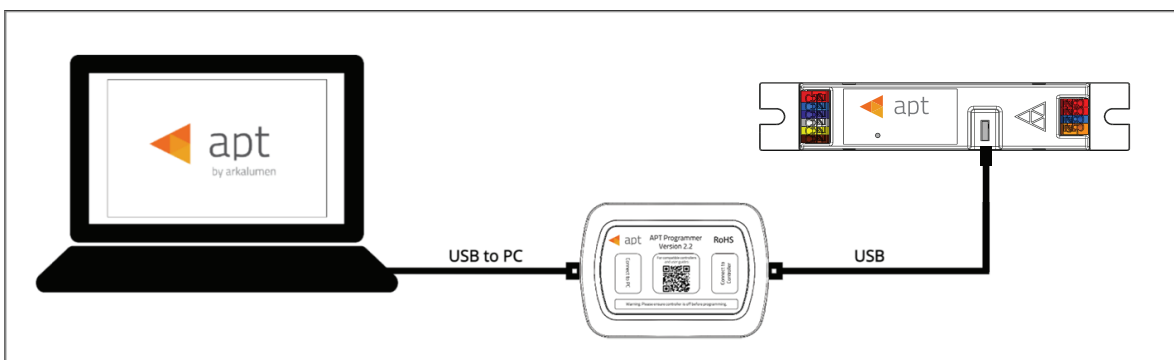
Using the APT Programmer

Installing the APT Programmer Interface

① Click on the provided link to download the **APT Programmer Interface** folder.

② Open the folder **APT Programmer Interface** on a Windows-based PC, and select the file **setup.exe**

③ Launch **setup.exe** to install the APT Programmer Interface. The APT Programmer Interface shortcut will be added to the Start Menu.

Running the APT Programmer Interface

① Launch the APT Programmer Interface software by selecting the application, **APT Programmer Interface**, from the Start Menu. The Programmer Connect window (shown in Figure 2) will open.

② Select the COM port to which the APT Programmer is connected from the **Port** drop-down menu. If a COM port is not visible, click the ⟳ button until the correct port is visible.

③ Click **Connect Controller** to establish a connection. Once connected, the APT Programmer Interface window (shown in Figure 3) will open.
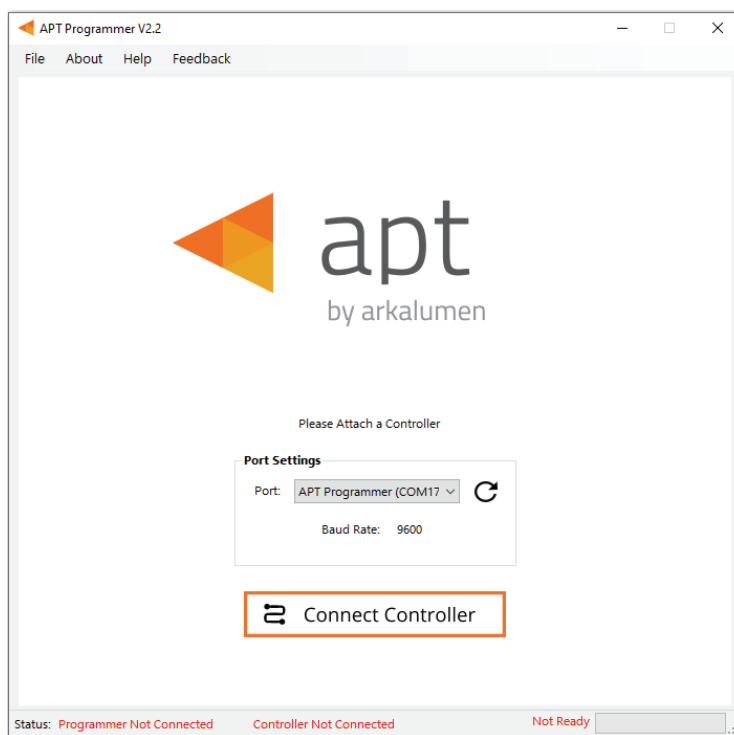
Note: Once connected, if the APT Programmer is not displayed in the port list, please run the CDM212364_Setup file sent with the APT Programmer software to install the drivers.
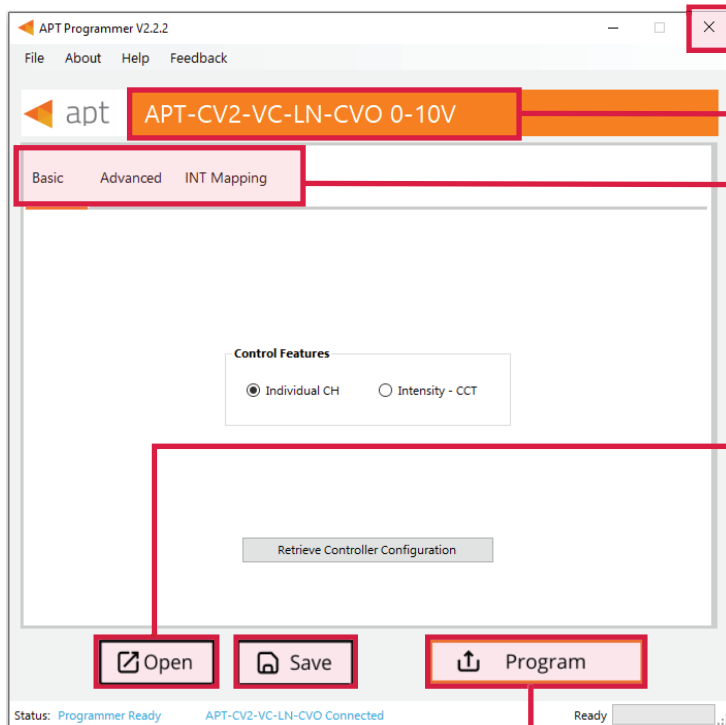
Using the Programmer Interface Window

Figure 3: Programmer Interface window

Exit the APT Programmer Interface by either clicking ×, pressing **Ctrl+Q** or selecting **File** > **Exit**. This will open a window with the option to save the current configuration.

*Note: Clicking **No** will discard all unsaved configurations.*

Displays the connected APT Controller.

Navigate through settings quickly by clicking on the tabs.

Open a previously saved configuration file (.ARKENC) by either clicking **Open**, pressing **Ctrl+O** or selecting **File > Open** from the menu.

Save the current configuration by either clicking **Save**, pressing **Ctrl+S** or selecting **File > Save** as from the menu. A .txt file is created with a readable summary of the saved configurations and a .ARKENC file which is used to upload the saved configurations to the APT Programmer User Interface or to APT the Production Programmer.

When satisfied with the configuration, click **Program** to program the controller.

The progress bar displays the status of the current task.

Displays **Programmer Ready** if the APT Programmer Interface has successfully connected to the APT Programmer. If no connection has been established, it will read **Programmer Not Connected**.

Displays the currently connected APT Controller and its hardware version. If no connected APT controller is found, it will read **Controller Not Connected**.

The Ready field in the Status Bar displays:
- Ready
- Not Ready
- Successfully Programmed
- Retrieve Successful
- Wrong Controller Connected
- No Controller Identified

Figure 4: Programmer Interface window - Status Bar at bottom of window of Fig 3
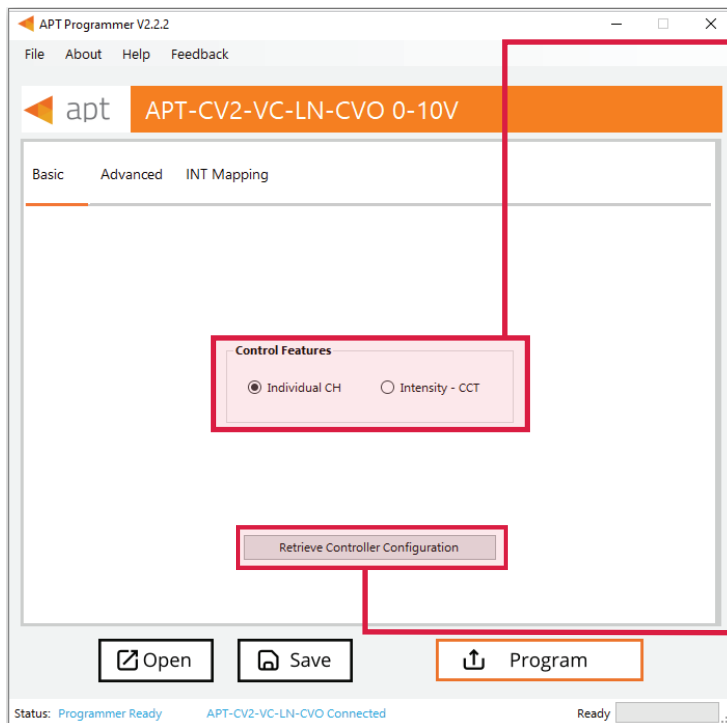
Basic Tab

Figure 5: Programmer Interface window - Basic tab

Click the radio button to enable a control feature.
• **Individual CH** enables output intensity control (brightness) for each channel.
• **Intensity-CCT** enables intensity control on COM1 port and calibrated correlated color temperature control (warm or cool light) on COM2 port of the APT controller.

Click **Retrieve Controller Configuration** to view the currently programmed configurations of the connected controller. A separate will open with the controller's configuration (shown in Figure 6).
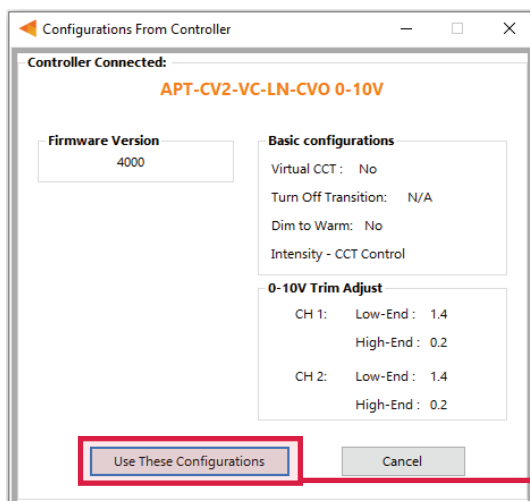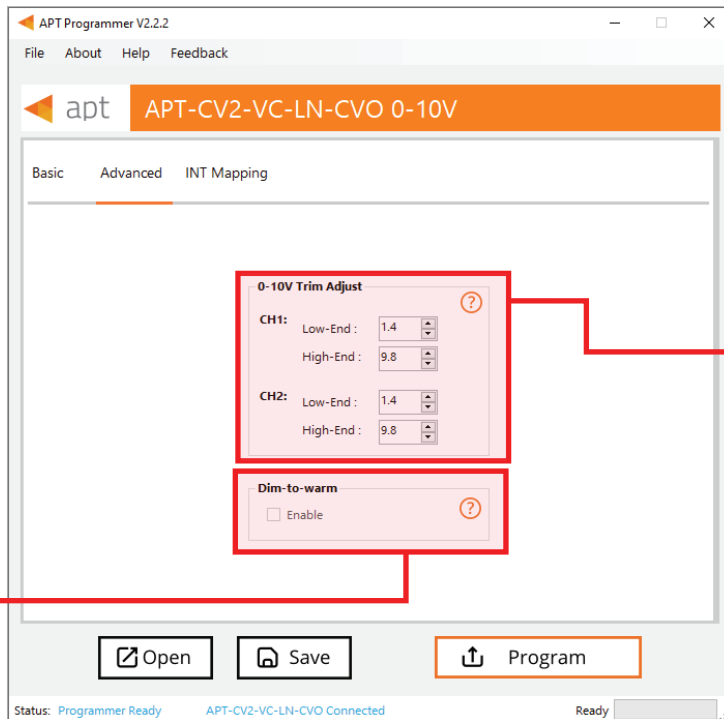

Figure 6: Configurations from Controller window

Click **Use These Configurations** to import the controller's current configuration into the APT Programmer Interface.

Note: All APT Programmer Interface settings will be changed to the controller's current configuration.

Advanced Tab

Figure 7: Programmer Interface window - Advanced tab

0-10V Trim Adjust

Enter the **Low End** and **High End** 0-10V trim values to designate ranges of input voltages to the minimum and maximum CCT and intensity outputs.

Enabling Dim-to-Warm

Dim-to-Warm feature is only available when Intensity-CCT is selected as the control feature.

1. Click the box to enable **Dim-to-Warm**. When dimming LEDs, the calibrated correlated color temperature (CCT) does not change. The Dim-to-Warm feature imitates the effect of halogen lamps, which get warmer when dimmed. Note: Use of a 2 channel is required.

2. Go to **CCT Mapping Tab** to upload Dim-to-Warm transition table between cool and warm light.
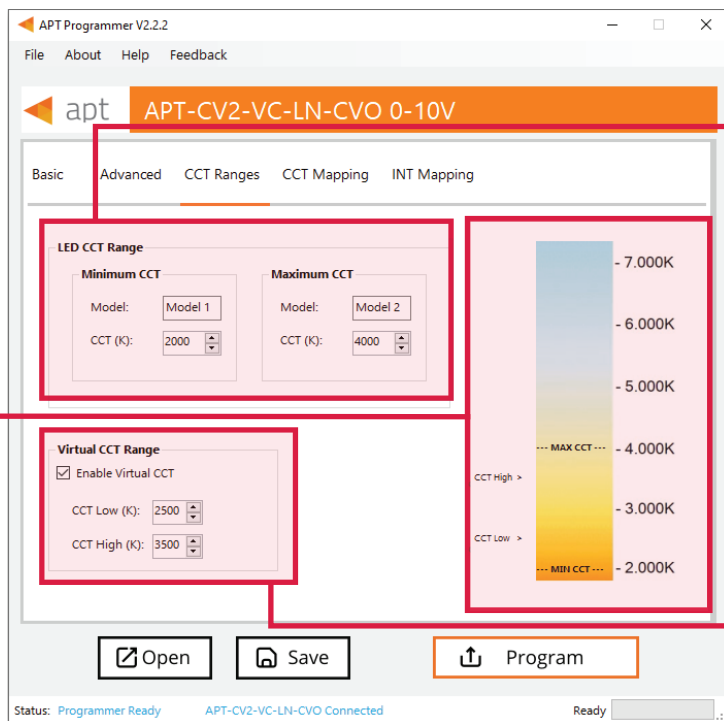
CCT Ranges Tab

Figure 8: Programmer Interface window - CCT Ranges tab

*The selection will be shown as **CCT Low** and **CCT High** in the column on the right-hand side of the Programmer Interface window.*

*Note: If enabled, the **Virtual CCT Range** takes precedence over the **LED CCT Range**.*

Setting a virtual (custom) CCT range

① Enter the **LED CCT Range** using the **Minimum CCT** and **Maximum CCT** values supported by the connected LED module.

   Note: The current settings will be shown as MIN CCT and MAX CCT in the right-hand column.

② Enter the LED **Model** numbers associated with the minimum and maximum CCT to add further information for the generated report.

③ Click the box to enable **Virtual CCT**.

④ Enter **CCT low** and **CCT high** values.

   *Note: **CCT low** must be greater than or equal to **Minimum CCT**, while **CCT high** must be less than or equal to **Maximum CCT**.*

CCT Mapping Tab

Figure 9: Programmer Interface window - CCT Mapping tab

Uploading CCT Custom Mapping

① Select **Intensity-CCT** control in the **Basic Tab**.

② Click the **Custom Mapping** button in the **CCT Mapping** tab.

③ Enter the number of CCT Intervals, ranging from 2 to 256, **CH1/CH2** percentage ratios will evenly distribute over the new CCT.

④ Select either **Linear** or **Step** function. Linear will create a CCT mapping with linear transitions between each interval point. Step will create a CCT mapping with step transitions between each interval point.

⑤ Add the values into the table to enter a percentage CCT ratio for either **CH1** or **CH2**.

*Note: Reselecting **Default Mapping** will open a window with option to save current custom mappings.*

Click **Lock CCT Mapping Table** to prevent changes from being made to the mapping table, this will also update the graph (shown in Figure 11).

Tip: Scroll to the bottom of the window to see the graph (Figure 11) of the current mapping configuration.

Click the **Upload Locked CCT Mapping To Controller** box to upload the mapping table when clicking **Program**.

Click **Unlock CCT Mapping Table**, when the mapping table is locked, to make changes to the table.

Displayed in the table, each CCT value is mapped to a percentage ratio for the particular channel ranging from minimum (0%) to maximum (100%). Default mapping evenly spreads out 256 values along a linear curve in which CH1 increases from 0% to 100% and CH2 decreases from 100% to 0%. Click the box to enable Default Mapping.

Enable **Import**, **Export**, or **Save** of the CCT Mapping Table by selecting button. Detailed steps on page 7.
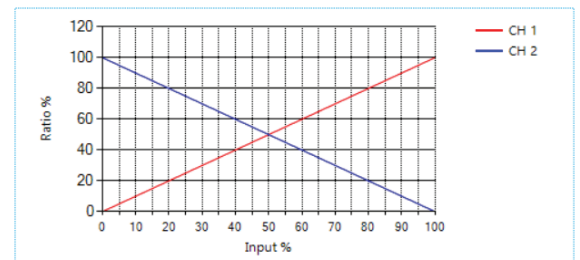

Figure 10: CCT mapping graph

Using Excel to Customize the mapping table

1 Click **Export Mapping Table** to generate a spreadsheet containing the mapping table that is currently open.

2 Modify the mapping table directly in the spreadsheet, make sure all editable cells contain a value.

3 Save the spreadsheet (.xlsx).

Saving the mapping table

1 Click **Save Mapping Table** to save the current mapping table.

2 Find a save location for the generated spreadsheet file (.xlsx) containing the mapping table that is currently open.

3 Name and save the file to the desired location.

Importing a previously saved mapping table

1 Click **Import Mapping Table** to open a previously saved mapping table in the APT Programmer Interface.

2 Select a previously saved mapping table spreadsheet file (.xslx) in the file browser.

3 Click **Open** in the file browser, to import the file. If the spreadsheet is formatted correctly, it will be successfully imported otherwise an error message will be displayed and the file will not be imported.
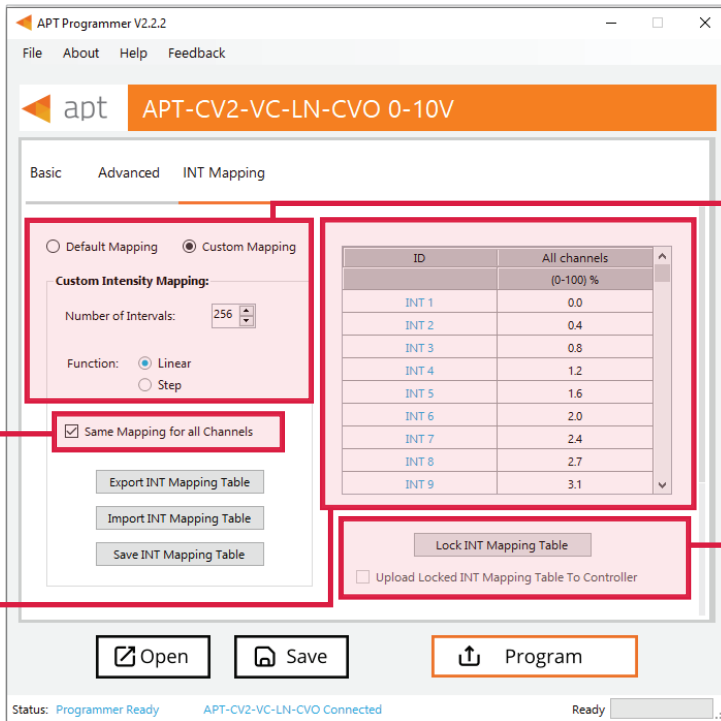
INT Mapping Tab

Figure 11: Programmer Interface Window - INT Mapping Tab

Uploading Intensity Mapping for Individual Channel Control

1 Select **Individual Channel** control in the Basic Tab.

2 Click the **Custom Mapping** button in the **INT Mapping** tab.

3 Enter the Number of Intensity intervals, ranging from 2 to 256.

4 Select either **Linear** or **Step function.** Linear will create a INT mapping with linear transitions between each interval point. Step will create an INT mapping with step transitions between each interval point.

*Tip: Click the **Same Mapping for All Channels** box to make the INT mappings identical for all channels CH1/CH2.*

5 Add the values into the table to enter a percentage ratio for either **CH1** or **CH2**.

*Note: Reselecting **Default Mapping** will open a window with the option to save the current custom mappings.*

Click **Lock INT Mapping Table** to prevent changes from being made to the mapping table.

Click the **Upload Locked INT Mapping Table To Controller** box to upload the mapping table when clicking **Program**.

Click **Unlock INT Mapping Table**, when the mapping table is locked, to make changes to the table.
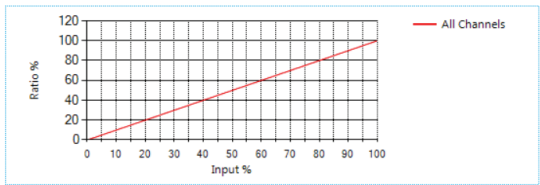
Displayed in the table, each INT value is mapped to a percentage ratio for the particular channel ranging from minimum (0%) to maximum (100%). Default mapping evenly spreads out 256 values along a linear curve in which both CH1 and CH2 increase from 0% to 100%. Click the box to enable Default Mapping.

ID	CH1 (% Ratio)	CH2 (% Ratio)
Max Cur	(0-100) %	(0-100) %
INT 1	0.0	0.0
INT 2	0.4	0.4
INT 3	0.8	0.8
INT 4	1.2	1.2
INT 5	1.6	1.6
INT 6	2.0	2.0
INT 7	2.4	2.4
INT 8	2.7	2.7

Figure 12: INT Mapping Tab - Same Mapping for all Channels Unchecked

*Figure 12 displays the INT Mapping table when the checkbox **Same Mapping for all Channels** is unchecked, allowing INT mapping for each Channel individually.*

Figure 13: INT Mapping graph for all channels
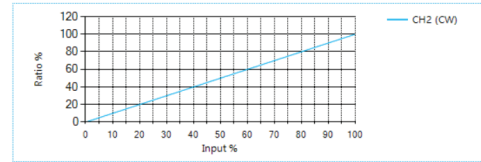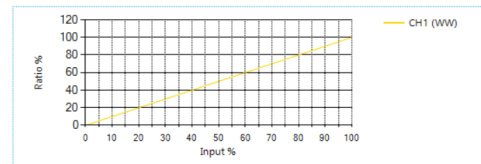
Figure 14: INT Mapping graphs for each channel

Figure 15: INT Mapping Tab when Intensity-CCT is selected as the control feature.
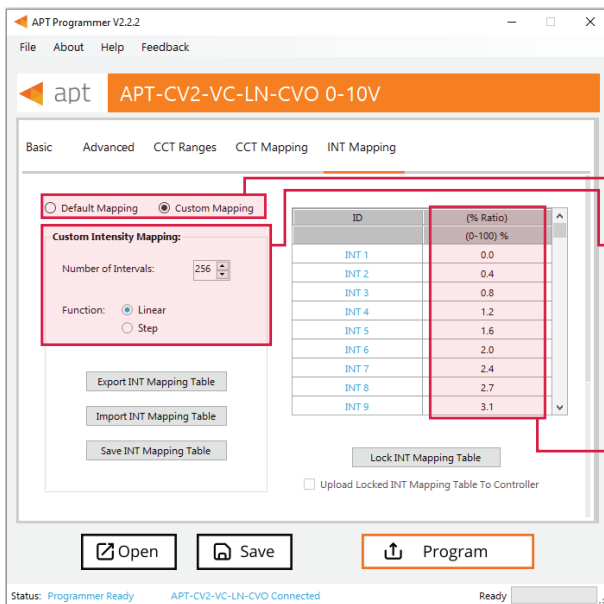
Uploading INT Mapping for the intensity of CCT

1. Select **Intensity-CCT** control in the **Basic Tab**.

2. Click the **Custom Mapping** button in the **INT Mapping** tab.

3. Enter the number of intensity intervals, ranging from 2 to 256.

4. Select either **Linear** or **Step function**. Linear will create an INT mapping with linear transitions between each interval point. Step will create an INT mapping with step transitions between each interval point.

5. Add the values into the table to enter an intensity ratio for the CCT.

   *Note: Reselecting **Default Mapping** will open a window with the option to save the current custom mappings.*
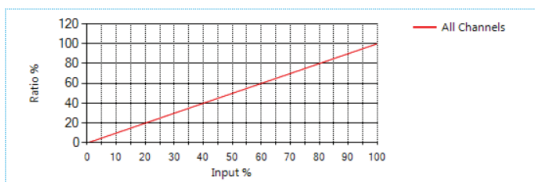

Figure 16: INT Mapping graph for the Intensity of the CCT

Using Excel to Customize the INT mapping table

1   Click **Export INT Mapping Table** to generate a spreadsheet containing the mapping table that is currently open.

2   Modify the mapping table directly in the spreadsheet without changing the formatting.

3   Save the spreadsheet (.xslx).

Saving the INT mapping table

1   Click **Save INT Mapping Table** to save the current mapping table.

2   Find a save location for the generated spreadsheet file (.xslx) containing the mapping table that is currently open.

3   Name and save the file in the desired location.

Importing a previously saved INT mapping table

1   Click **Import INT Mapping Table** to open a previously saved mapping table in the APT Programmer Interface.

2   Select a previously saved mapping table spreadsheet file (.xslx) in the file browser.

3   Click **Open** in the file browser to import the file; if the spreadsheet is formatted correctly, it will be successfully imported.

Tip: Scroll to the bottom of the window to see graphs (shown in Figures 13, 14, and 16) of the current INT mapping configuration.

Generating Labels

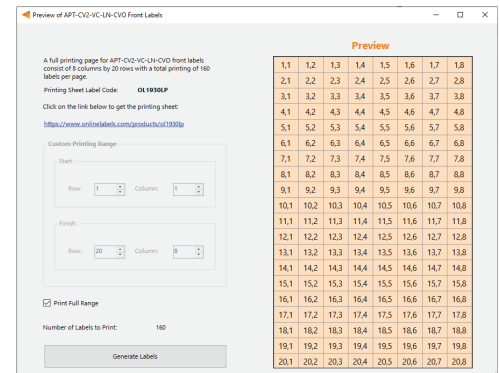

Figure 17: Label Generation window

Figure 18: Label generation print preview window

1. Select **File > Generate Label** or press **Ctrl +L** to open the Label Generation window (shown in Figure 17).

2. Input the 4-digit **ID Number** written on the original label (shown in Figure 17). The ID Number indicates the production build of the APT Controller.

3. Click **Generate Labels**.

4. Input the starting and finishing rows and columns that will fit on the back or front labels. The selected range is highlighted in blue (Figure 18).

5. Select **Print Full Range** to print the whole page.

6. Click **Generate Labels**, the default web browser will open and display a preview of the print.

   Note: Arkalumen recommends using Google Chrome and setting margins to **None** *in the printing options*.

To obtain blank labels, contact Arkalumen or visit onlinelabels.com
Labels: https://www.onlinelabels.com/products/ol1930lp
When ordering, Arkalumen recommends selecting Weatherproof Polyester labels in a material suited for your printer.

Generating a Report

Figure 19: Report Generation window

1. Select **File** > **Generate Report**, or press **Ctrl+R**, to open the Report Generation Window (shown in Figure 19).
2. Enter the **Date**, **Customer**, **Company**, and **Light Engine** part number to customize the report.
3. Click on the white box under **Add Company Logo** to include a logo in the report *(optional)*.
4. Select the desired logo (.jpg) in the file browser and click **Open** *(optional)*.
5. Click **Generate Report**, the default web browser will open and display a preview of the print (shown in Figures 20 & 21).

*Note: Arkalumen recommends using Google Chrome and setting margins to **None** in the printing options.*
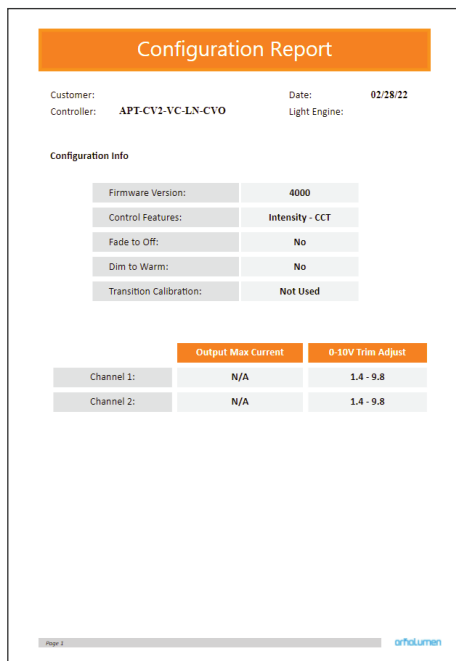

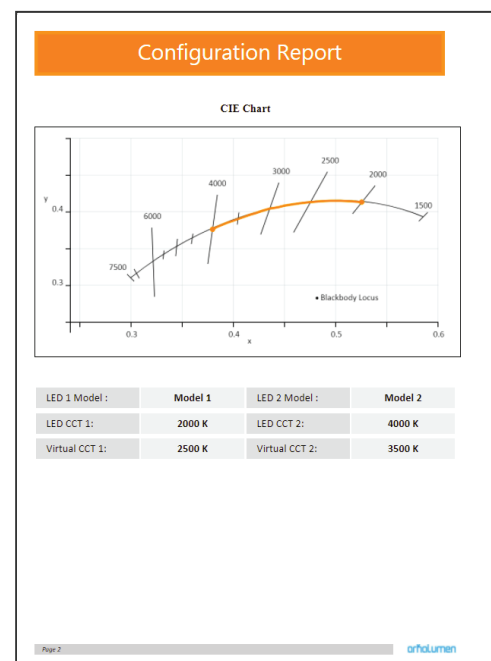**Figure 20: Example of the first page of a generated report**

Figure 21: Example of the second page of a generated report

If at any time you have comments or suggestions regarding the APT Programmer or APT Controller, please click on the **Feedback** tab in the top menu bar to submit information to our team. We appreciate all feedback and are committed to continuously improving our products. For immediate support, please contact the Arkalumen team at 1-877-856-5533 or email support@arkalumen.com

Arkalumen designs and manufactures intelligent LED controllers and custom LED modules for light fixture manufacturers in order to enable energy efficient and feature rich lighting solutions. For over 10 years, **Arkalumen** has focused on simple, flexible, cost effective solutions that allow highly differentiated fixtures to be launched in commercial, industrial, and residential markets. With 30+ patents, we have a history of driving innovation within the lighting industry and are proud to push the limits of what lighting in applications in education, healthcare, film and horticulture can be.

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