GUI Manual

# KA32180A, KA32182A & KA32183A
# Kirari LED Driver IC
# Pattern Converter GUI
# User Manual

## CHARACTERISTICS

- Convert pattern file (.cmf) generated by Kirari LED Driver IC Demo Software (PC-GUI) to a header file (.h) for MCU compilation
- Support the pattern conversion of 3 types of Kirari LED Driver IC (KA32180A/KA32182A/ KA32183A)
- Maximum 10 playlists of pattern for 3 types of IC each can be converted to one header file (.h). *
- Maximum 9 pattern files (.cmf) in a single playlist for conversion. *
- Calculate the total data length of header file (.h) converted.

## OVERVIEW

The KA3218xA Pattern Converter GUI Software is part of Nuvoton Kirari LED Driver IC Starter Kit.

It converts LED pattern file (.cmf) designed and generated by Kirari LED Driver IC Demo Software (PC-GUI) to a header file (.h) for MCU compilation.

** Note*

*Although maximum 270 (3 IC x 10 playlists x 9 patterns ) pattern files (.cmf) can be converted to one header file (.h), this header file (.h) is valid for compilation depends on whether the data length of header file can meet the size specification of flash memory of MCU board. Otherwise, it will prompt error during the compilation. For example, user is recommended to convert about 110kbyte data length of header file (.h) for complication of MCU M483SE8AE (128kB) which used by Kirari Starter Kit.*

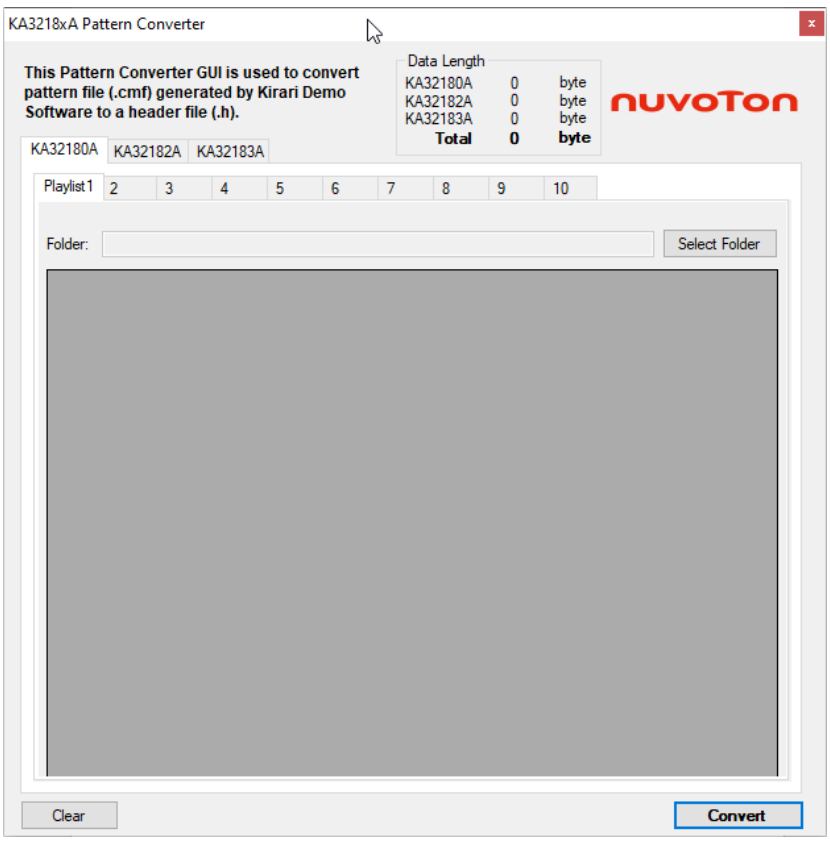


Figure 1 KA3218xA Pattern Converter GUI Software

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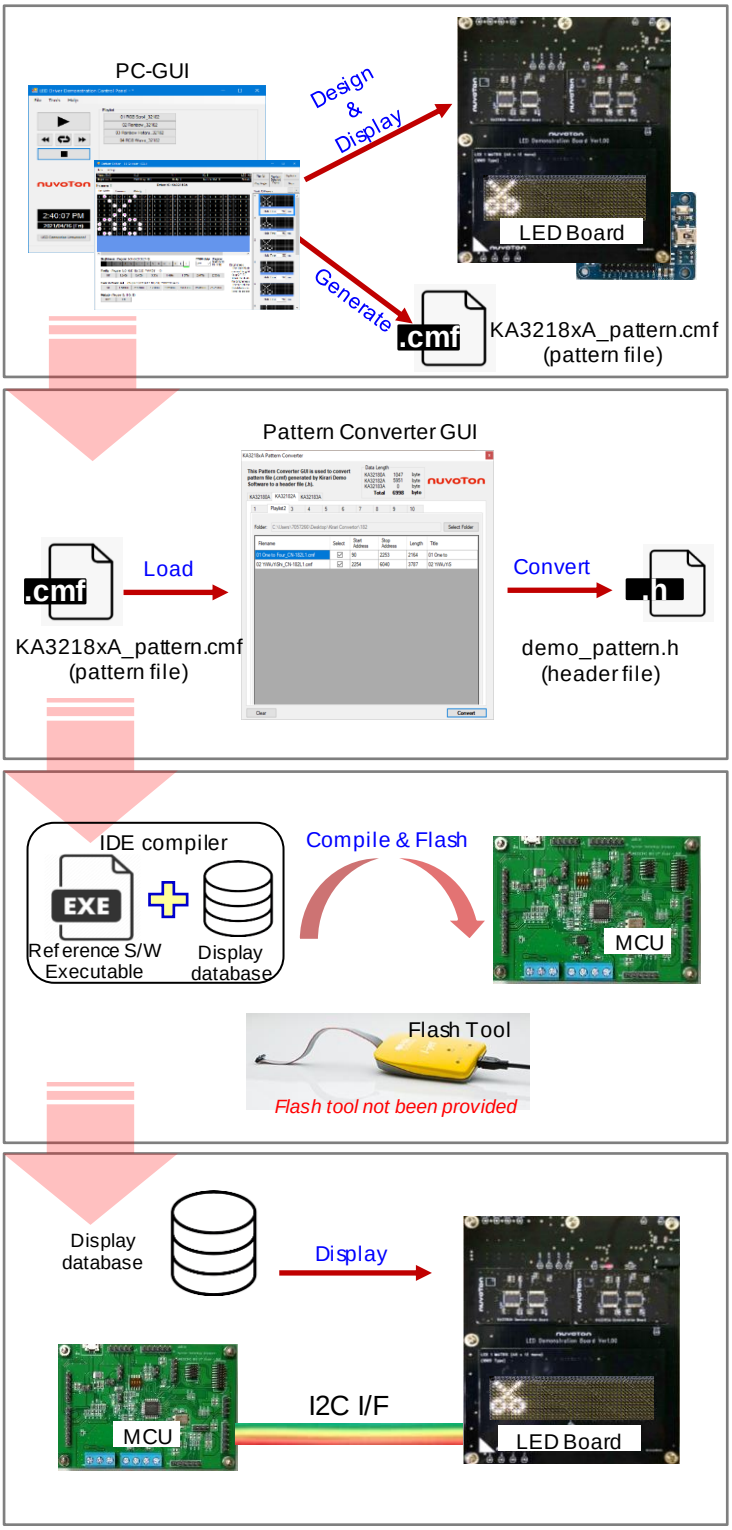
## KIRARI STARTER KIT USER FLOW

The figure below illustrates the Kirari Starter Kit usage flow. It assists the user to understand how Kirari Starter Kit works with the setup of the demo platform.




1) Using PC-GUI to design and display patterns on LED board, and generate pattern file (.cmf) at the same time.

Refer to "User Manual_Kirari LED Driver IC (KA3218xA) Demo Software (PC-GUI)" for more details.

2) Using Pattern Converter GUI to load and convert generated pattern files (.cmf) to a header file (.h)

3) Using Complier tool (IDE) to compiles the converted header file (.h) with device drivers, which will be flashed into flash memory of MCU using flash tool.

Refer to "User Manual_Kirari LED Driver IC (KA3218xA) Starter Kit Reference Software" for more details.

4) Connecting MCU board to Kirari Demo board, MCU will control the Kirari IC to display designed LED patterns on LED board.

Refer to "User Manual_Kirari LED Driver IC (KA3218xA) Starter Kit Reference Hardware" for more details.

Figure 2 Kirari Starter Kit User Flow

## SOFTWARE INSTALLATION REQUIREMENT

This GUI requires Windows .NET Framework 3.5 to be installed and enabled. Steps are explained as below.

### Enable the .NET Framework 3.5 in Control Panel

(1) Click on the Windows Logo (Windows Start Menu) on PC desktop. On your keyboard, type "Windows Features", and press Enter. The Turn Windows features on or off dialog box appears.
(2) Check the ".NET Framework 3.5 (includes .NET 2.0 and 3.0)" check box, select OK, and reboot your computer if prompted.

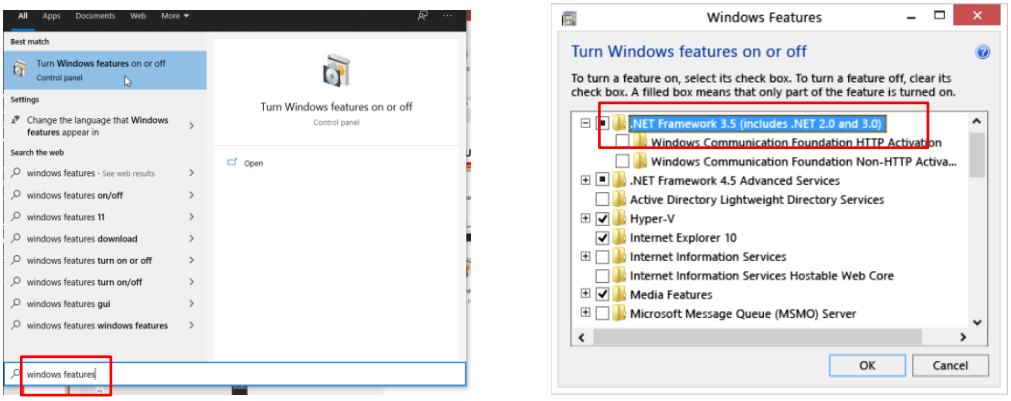



Figure 3 Enable .NET Framework3.5

### Install the .NET Framework 3.5 on demand

(1) The .NET Framework 3.5 SP1 offline installer is available on the .NET Framework 3.5 SP1 Download page and is available for Windows versions prior to Windows 10.
(2) Choose Install this feature to enable the .NET Framework 3.5 as figure. This option requires an Internet connection.

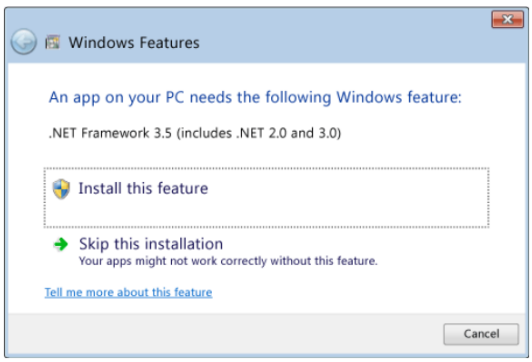



Figure 4 Install .NET Framework3.5

## STEPS OF USING GUI SOFTWARE

1> Launch GUI Software (KA3218xPatternConverter.exe) from PC. Figure 5 illustrates the GUI upon successful launch.

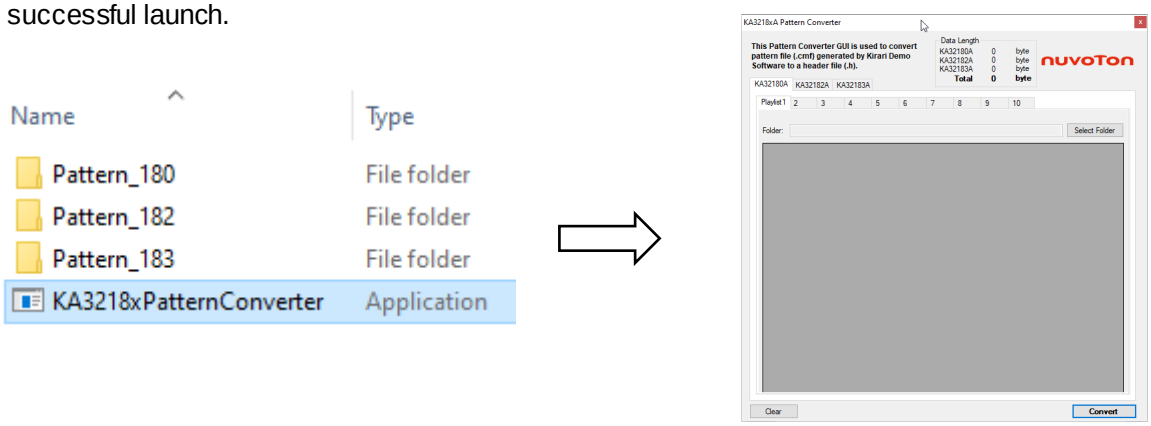



Figure 5 Successful Launch GUI software

2> Click the IC tab (KA32180A/KA32182A/KA32183A) and click “Select Folder” to select the folder of Pattern files in one playlist. The patterns will be loaded into the GUI. Figure 6 illustrates an example of loading 3 patterns of KA32180A in Playlist1 of IC tab KA32180A and 2 patterns of KA32182A in Playlist 2 of IC tab KA32182A.

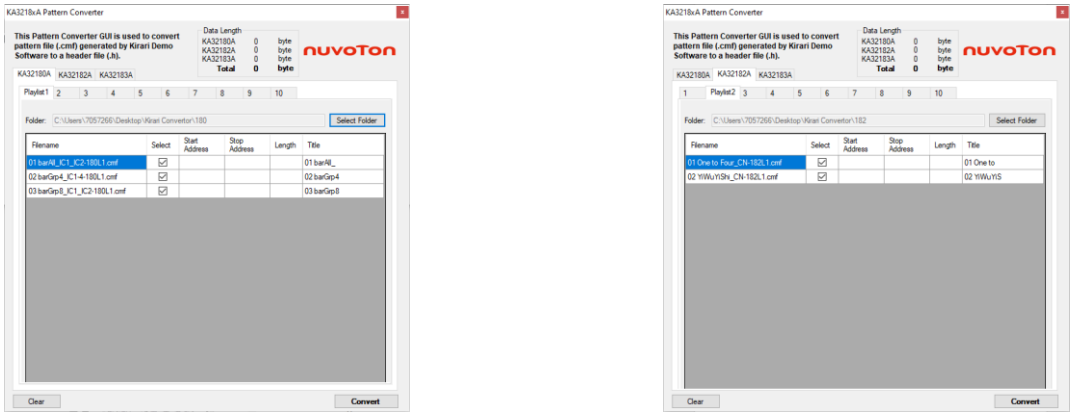



Figure 6 Example of loading 3 patterns of KA32180A & Example of loading 2 patterns of KA32182A

3> Click the Convert button to convert the patterns selected into one header file (demo_pattern.h). Figure 7 illustrates an example of completing the pattern file conversion.

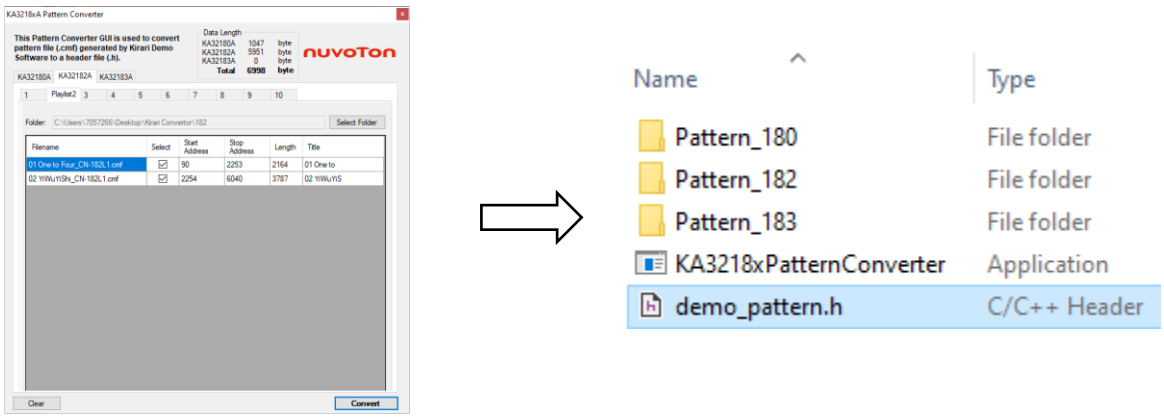



Figure 7 Convert pattern file to header file

## DESCRIPTION OF CONTROLS

Below is the figure of GUI with a playlist (example of KA32183A Playlist 1) loaded with pattern files (.cmf). Refer to next page for details of explanation.

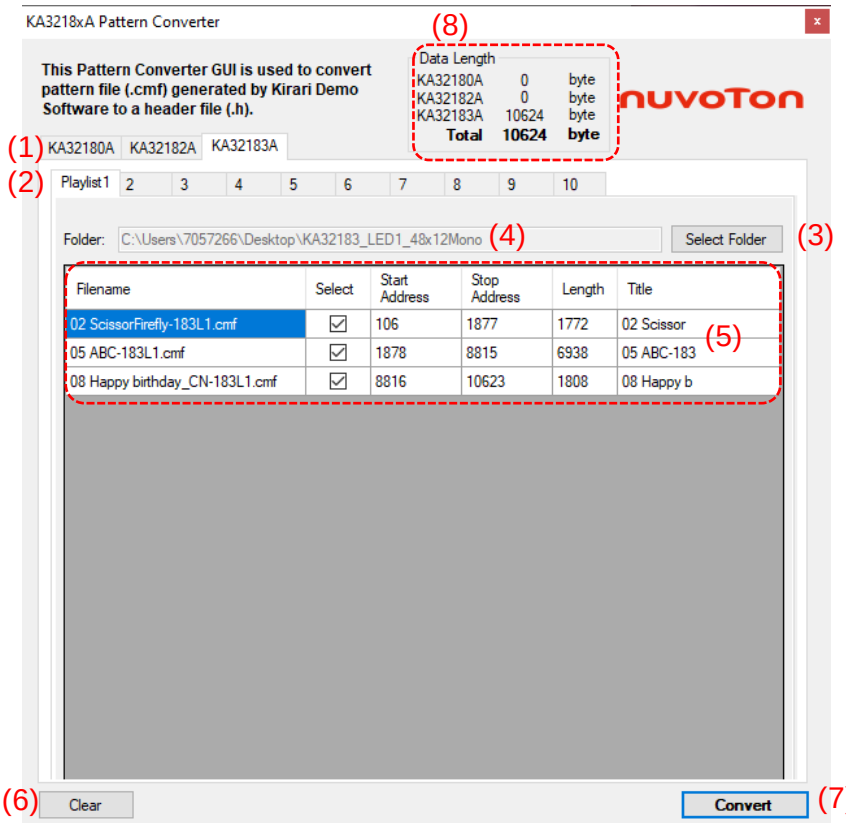



Figure 8 Controls of GUI

1. **IC Tab** – Select the patterns files (.cmf) according to specific Kirari LED Driver IC KA32180A/ KA32182A/KA32183A
2. **Playlist Tab** – Select the playlist to load pattern files (.cmf)
3. **Select Folder Button** – Select the folder of pattern files (.cmf) located.
4. **Selected Folder Location Text** – Display the path of folder selected.
5. **Playlist information Table** – Display the information of loaded pattern files (.cmf) in playlist.
6. **Clear Button** – Clear all loaded pattern files (.cmf) in current playlist.
7. **Convert Button** – Convert all patterns files (.cmf) in all playlists of all IC types to header file (.h).
8. **Data Length Text** – Display the calculated data length of converted header file (.h) for individual IC type and total.

## DESCRIPTION OF CONTROLS (con't)

**1. IC Tab** –Select the patterns files (.cmf) according to specific Kirari LED Driver IC KA32180A/ KA32182A/KA32183A

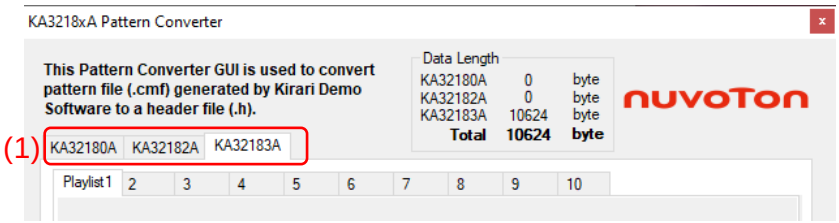



Figure 9 Controls of GUI – IC tab

- User can convert pattern files (.cmf) of 1 to 3 types Kirari LED Driver IC to one single header file (.h) for MCU compilation.

**2. Playlist Tab** – Select the playlist to load pattern files (.cmf)

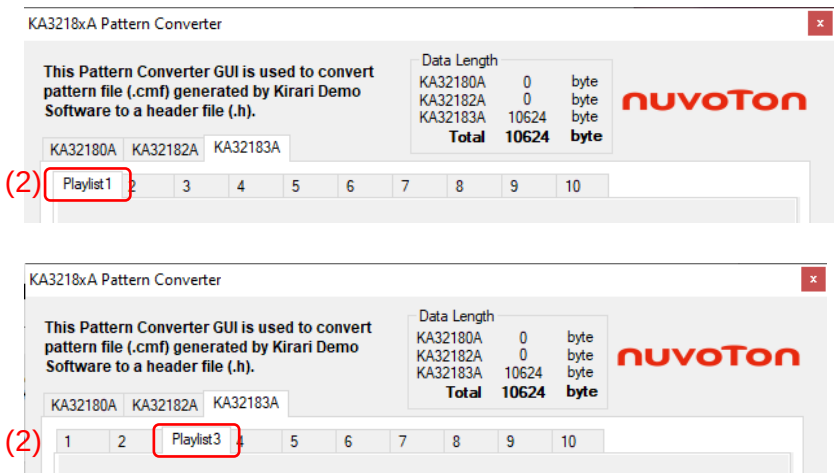



Figure 10 Controls of GUI – Playlist tab

- Maximum 10 playlists * of pattern for 3 types of IC each can be converted to one header file (.h).
- Once click the playlist tab number "X", the text of tab will change to "PlaylistX".

**Note*
*For the Kirari LED Driver IC Starter Kit, only Playlist1 can be used.*

## DESCRIPTION OF CONTROLS (con't)

**3. Select Folder Button** – Select the folder of pattern files (.cmf) located.

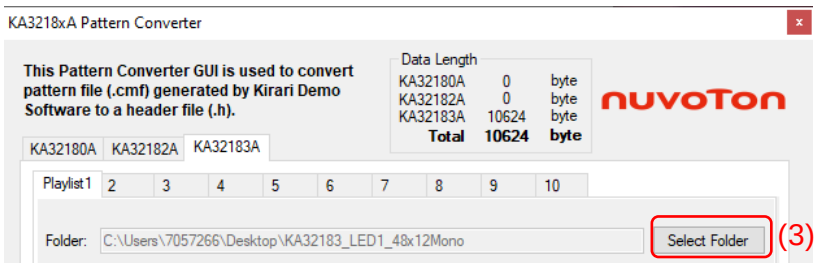



Figure 11 Controls of GUI – Select folder button1

- Save the patterns(cmf) into the same folder according to the type of IC firstly. (e.g Save 183 pattern files into Pattern_183 folder)
- After selecting the IC tab (e.g KA32183A), select the playlist tab (e.g Playlist1) and click Select Folder button to browse for folder.
- When selecting folder for browsing, make sure that the selected pattern files is under correct IC tab. (e.g select 183 pattern folder in KA32183A IC tab)
- User can define the playlist contents and number of playlist *. (e.g select 183 pattern folder in Playlist1 of KA32183A IC tab).

*Note:*
**1: All pattern files in the selected folder will be loaded into GUI, and the number and sequence of pattern files loaded will be the same with the number and sequence of pattern files inside the selected folder.*
**2: For the Kirari LED Driver IC Starter Kit, only Playlist1 can be used.*

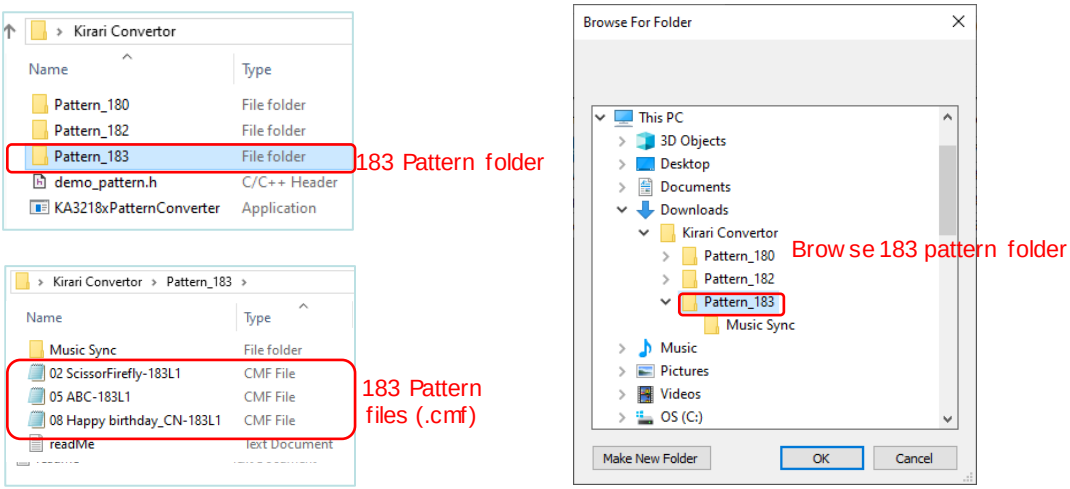



Figure 12 Controls of GUI – Select folder button2

## DESCRIPTION OF CONTROLS (con't)

**4. Selected Folder Location Text** – Display the path of folder selected.

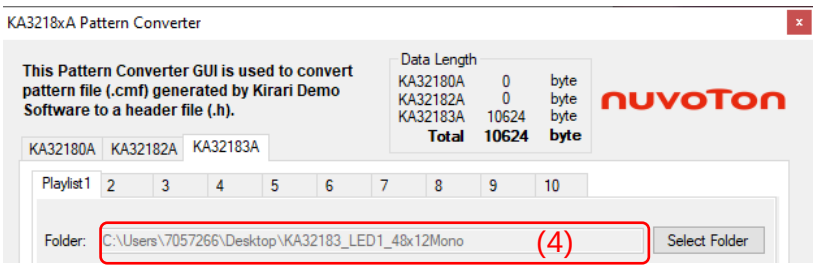



Figure 13 Controls of GUI – Selected folder location

**5. Playlist Information Table** – Display the information of loaded pattern files (.cmf) in playlist.

(5)

| Filename | Select | Start Address | Stop Address | Length | Title |
|---|---|---|---|---|---|
| 02 ScissorFirefly-183L1.cmf | ☑ | 106 | 1877 | 1772 | 02 Scissor |
| 05 ABC-183L1.cmf | ☑ | 1878 | 8815 | 6938 | 05 ABC-183 |
| 08 Happy birthday_CN-183L1.cmf | ☑ | 8816 | 10623 | 1808 | 08 Happy b |
| a | b | c | d | e | f |

Figure 14 Controls of GUI – Playlist information

- Playlist information consists of 6 columns:
  - a) **Filename** – Read only. Display the filename of selected pattern file (.cmf)
  - b) **Select** checkbox – Check to enable the conversion, uncheck to disable the conversion.
    - After selecting folder, first 9 pattern file (.cmf) are checked by default, the rest of pattern file (.cmf) are unchecked.
    - Only selected pattern files (.cmf) can be converted, and maximum 9 pattern files (.cmf) in one playlist can be converted.
    - GUI will prompt error if select more than 9 pattern files (.cmf) in one playlist.
  - c) **Start Address** – Read only. Display the start address of selected pattern file (.cmf) on header file (.h) after conversion.
  - d) **Stop Address** – Read only. Display the stop address of selected pattern file (.cmf) on header file (.h) after conversion.
  - e) **Length** – Read only. Display the data length (byte) of selected pattern file (.cmf) on header file (.h) after conversion.
  - f) **Title** – Editable. Edit the information of selected pattern file (.cmf) with maximum 10 characters for reference purpose.

**6. Clear Button** – Clear all loaded pattern files (.cmf) in current playlist.


Figure 15 Controls of GUI – Clear button

## DESCRIPTION OF CONTROLS (con't)

**7. Convert Button** – Convert all patterns files (.cmf) in all playlists of all IC types to a header file (.h).


Figure 16 Controls of GUI – Convert button

- After conversion, GUI will prompt message and generate a header file (demo_pattern.h) and save into working folder.
- This file will be used for MCU compilation.

**8. Data Length Text** – Display the calculated data length of converted header file (.h) for individual IC type and total.

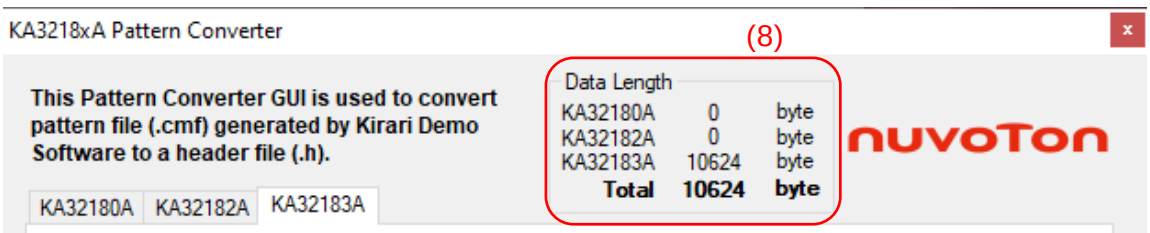



Figure 17 Controls of GUI – Data length text

- Data Length consists of 4 data:
  - Data length (byte) of all converted pattern files (.cmf) of Kirari LED driver IC **KA32180A** on header file (.h)
  - Data length (byte) of all converted pattern files (.cmf) of Kirari LED driver IC **KA32182A** on header file (.h)
  - Data length (byte) of all converted pattern files (.cmf) of Kirari LED driver IC **KA32183A** on header file (.h)
  - Data length (byte) of all converted pattern files (.cmf) on header file (.h)
- Data length information provides the information for user to judge if this header file (.h) meet requirement of MCU compilation.
- For example, after conversion, the data length of KA32180A is 0 bytes, the data length of KA32182A is 0 byte, and the data length of KA32183A is 10624 byte. Therefore, the total data length is 10624 bytes (0 + 0 + 10624) which is about 110kbyte, and the final header file (demo_pattern.h) should be able to used for Kirari Starter Kit MCU compilation.

*Note*
*For Kirari Starter Kit, user is recommended to convert about 110kbyte data length of header file (.h) for complication of MCU M483SE8AE (128kB).*

## CONVERSION STEPS FLOWCHARTS

The flowcharts below illustrate the conversion steps from pattern file (.cmf) to a header file (.h) using Pattern Converter GUI.
Left flowchart describes the conversion steps for general usage, right flowchart describes the conversion steps for Kirari Starter Kit only. For the Kirari LED Driver IC Starter Kit, only Playlist1 can be used, and user is recommended to convert about 110kbyte data length of header file (.h) for complication of MCU M483SE8AE (128kB).

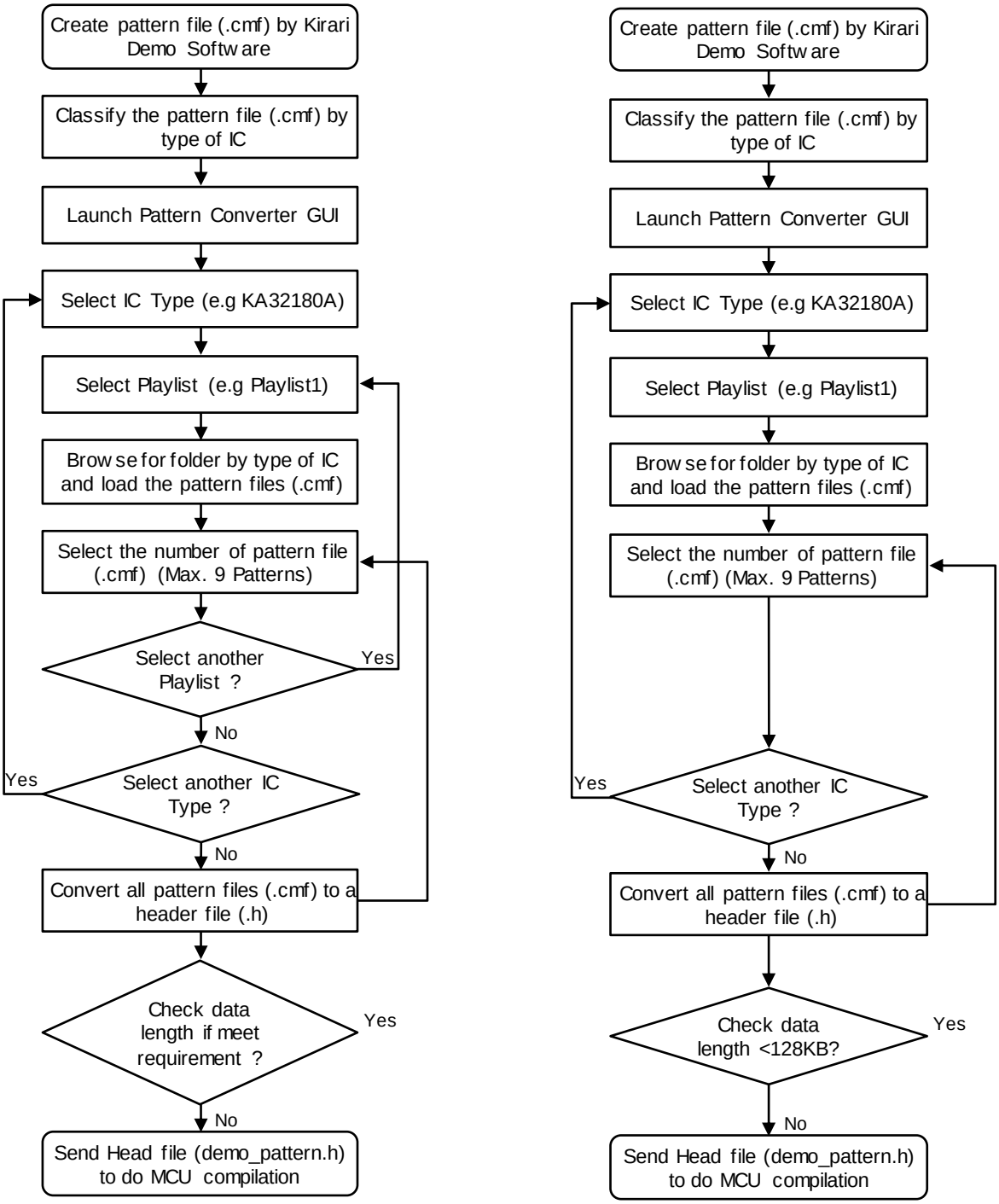



Figure 18 Conversion steps flowchart

## REVISION HISTORY

| Date | Revision | Description |
|---|---|---|
| 2021.9.3 | 1.00 | 1. initially issued. |