BLE Autogeneration Tool User Guide

UG7633, Rev 0; 04/22

Abstract

This user guide details how to use the Bluetooth Low Energy (BLE) Autogeneration Tool. Details on the BLE Autogeneration Tool can be found in the BLE Autogeneration User Guide.

29 April 2022   **1**

![Analog Devices logo](AHEAD OF WHAT'S POSSIBLE™)

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General Description

The BLE Autogeneration Tool simplifies the use of custom Bluetooth Low Energy (BLE) services in Mass Spectrometry Development Kit (MSDK) projects.

The tool takes a Microsoft Excel file as an input. The Microsoft Excel file tabulates all the required information related to the BLE services and characteristics in a simpler form. The tool generates the required '.c' and '.h' files according to the description in the MS Excel file. In short, users never interfere with the complicated ADI BLE Cordio Stack source codes, but use well-organized MS Excel sheets.
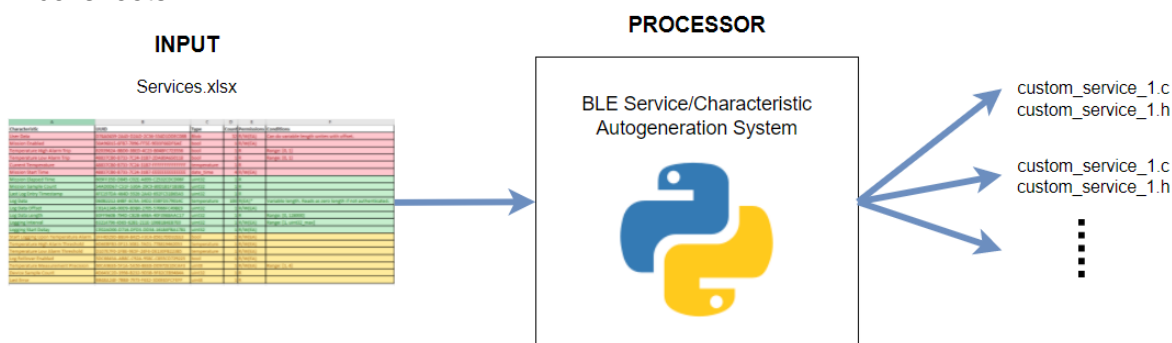

Figure 1. General operation of the BLE autogeneration tool.

Using the BLE Autogeneration Tool

Using the BLE autogeneration tool can be separated into 'Excel Preparation' and 'Source Generation'.

Excel Preparation

Firstly, define the proper Microsoft Excel file for operation. The Microsoft Excel files have the services sheet and flexible number of characteristics sheets.

Figure 2 shows a services sheet with three different services, each with a special Excel sheet defined for it. The user can define more custom services on the services sheet. The required information for each column in the services sheet is listed as following:

- **SheetName:** Microsoft Excel sheet name of specified service.
- **Description:** Description of the specified service.
- **UUID:** Universally Unique Identifier (UUID) of specified service.
- **Start Handle:** BLE Cordio Stack related ID for each service. There must be enough difference among the services to cover the characteristics defined on the specified service.
- **Type:** Type of the specified service.

SheetName	Description	UUID	Start Handle	Type
Device Information	Device Information	180A	0x0020	Primary
Sample Service 1	Sample Service	4E771A15-2665-CF92-8569-8C642A4AB357	0x0050	Primary
Sample Service 2	Sample Service	262AE68D-1899-D88A-EEE7-15FF17941D89	0x0090	Primary

Services | Device Information | Sample Service 1 | Sample Service 2 | ⊕

Figure 2. Services sheet with three different services.

Figure 3 shows the sample service 2 Microsoft Excel sheet that defines the characteristics for this service. To define the characteristic, the required fields are:

- **Characteristic:** Name of the characteristic.
- **UUID:** UUID for the characteristic.
- **Type:** Type of the characteristic as uint8, uint16, uint32, int8, int16, int32.
- **Count:** Number of type items of this characteristic. More than 1 means array.
- **Permissions:** Permission of the characteristic such as R/W, W, R.
- **Default:** Default value for the characteristic.

Characteristic	UUID	Type	Count	Permissions	Default
Sample Characteristic 1	42280CC2-421C-6271-F66B-DFB29D9A68D5	uint16	1	R/W(EA)	1000
Sample Characteristic 2	B3A5FE9A-202A-EBFA-9A94-03B932758A05	uint32	1	R/W(EA)	0
Sample Characteristic 3	913DB698-35B8-5866-C9E5-16ADEFE1AC0A	uint8	10	W(EA)	0
Sample Characteristic 4	B6FC9072-A6E3-3708-CE2A-97FFDFD15A3F	uint32	1	W(EA)	12345

Services | Device Information | Sample Service 1 | **Sample Service 2** | ⊕

Figure 3: Sample service 2 sheet.

Source Generation

To generate the BLE source and header files, run 'BLE Services Autogeneration.exe' (**Figure 4**).

PC › Windows (C:) › MaximSDK › Tools › BLE_Service_Generator

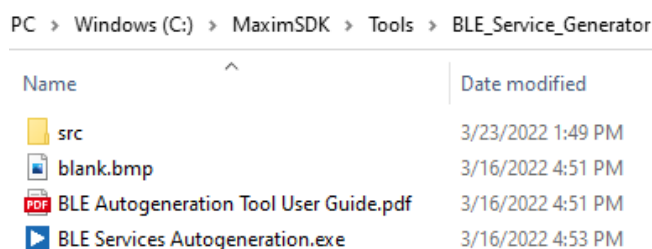| Name	Date modified
src	3/23/2022 1:49 PM
blank.bmp	3/16/2022 4:51 PM
BLE Autogeneration Tool User Guide.pdf	3/16/2022 4:51 PM
BLE Services Autogeneration.exe	3/16/2022 4:53 PM

Figure 4. Run 'BLE Services Autogeneration.exe'.

To use the BLE Services Autogeneration tool, provide these inputs to the tool (**Figure 5**):

- **BLE Excel File Folder:** Microsoft Excel file prepared for autogeneration.
- **Include Folder:** The folder where '.h' files are autogenerated.
- **Source Folder:** The folder where '.c' files are autogenerated.
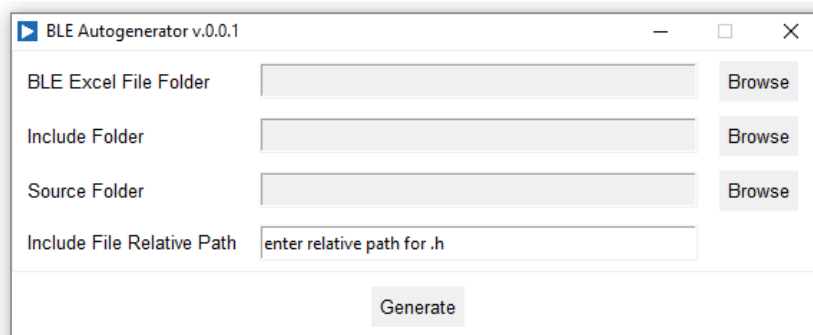- **Include File Relative Path:** Relative path to make '.h' files visible to '.c' files.

Figure 5. Inputs to the BLE autogeneration tool.

After providing all the required information, click 'Generate' to generate the files (**Figure 6**).
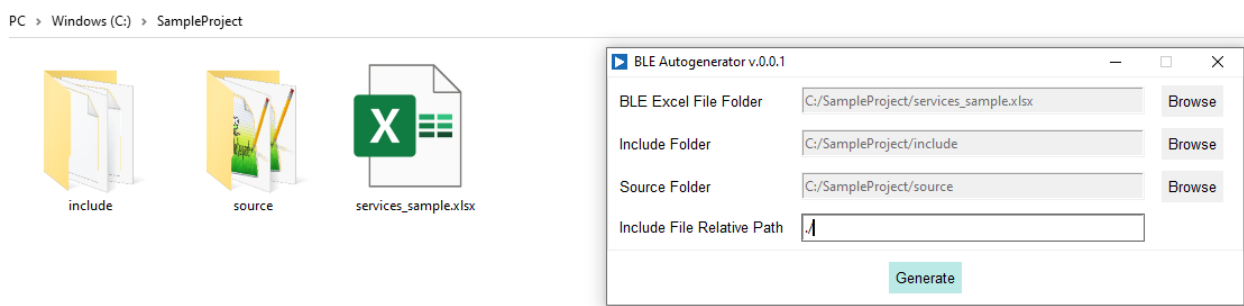

Figure 6. Click 'Generate'.

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Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	4/22	Initial release	—

Trademarks

Bluetooth Low Energy (BLE) is a registered trademark and service mark of Bluetooth SIG.

Microsoft Excel is a registered trademark and service mark of Microsoft Corporation.