Release Notes

DA14585/DA14531-CodeLess

SW-B-023

Abstract

This document contains the release notes for Dialog Semiconductor's CodeLess reference application version 6.380.12.6.

Contents

Tables

1   Terms and Definitions

BLE	Bluetooth Low Energy
GA	General access
LA	Limited access
SDK	Software Development Kit
SUOTA	Software Update over The Air
UART	Universal asynchronous receiver transmitter
OTP	One-Time-Programmable

2   Release Data

Table 1: Information Table

Software	DA14585/DA14531 CodeLess reference application
Device Number	DA14585, DA114586, DA14531
Device Type	
Device Revision	
Operating System	
Operating System Version	
Software Release Date	09-September-2020
Software Version Number	6.380.12.6
Software SDK Number	6.0.14.1114
Software Release Type (Note 1)	FULL (GA)

Note 1   Releases can be of the following types: FULL (GA), FULL (LA), RELEASE CANDIDATE, ENGINEERING, PATCH or BINARY

3   License

Licenses covering this DA14585/DA14531 CodeLess release are listed in the licensing.txt file within the sdk6 folder.

4   Related Documentation and References

[1]   DA14531, Datasheet, Revision 3.1, Dialog Semiconductor.

[2]   DA14585, Datasheet, Revision 3.3, Dialog Semiconductor.

[3]   UM-B-140, CodeLess DA14531-DA14585/586 Reference Application, User Manual, Revision 1.1, Dialog Semiconductor

5 Release Description

5.1 Overview

This is a full (GA) release of the CodeLess reference application for the DA14531/DA14585/586 line of products. The CodeLess AT Commands platform allows the control of a Bluetooth device through a local UART as well as a remote device via BLE with a comprehensive set of ASCII instructions (AT Commands) enabling a developer to make a fast peripheral or central application (or both) with minimum Bluetooth® knowledge. AT commands include support for binary data exchange, security, events, handlers and non - volatile storage. Furthermore, SUOTA is supported as well. In addition to the CodeLess application itself, a host application and mobile phone application have been developed for CodeLess. A more detailed overview of CodeLess command set for both DA14585/DA14586 and DA14531, the host application and the mobile phone application can be found at the CodeLess Reference application user manual.

This is a full (GA) release following the previous full (GA) release 6.380.10.4. In this version of CodeLess a connection issue (disconnection after a 3-minute interval) has been identified and fixed when the AT+RSSI command is used. No other changes have taken place and therefore information on new/updated features, fixes, improvements, known issues and known limitations is the same as in the previous version.

5.2 New and Updated Features of 6.380.12.6

Version 6.380.12.6 does not have any new or updated features as compared to version 6.380.10.4.

5.3 Fixes and Improvements since 6.380.10.4

Table 2: 6.380.12.6 Fixes and Improvements

Fix Number	Description
1	Connection timeout fix. In the codeless_531_standalone_set_two target a connection with the peer device drops consistently after ~3 minutes. The issue was caused by the AT+RSSI command.

5.4 Known Issues of 6.380.12.6

Known issues of version 6.380.12.6 are the same as in version 6.380.10.4

5.5 Known Limitations of 6.380.12.6

Known limitations of version 6.380.12.6 are the same as in version 6.380.10.4.

6 Release History

6.1 6.380.10.4

Version 6.380.10.4 of CodeLess reference design was released on 4 Jun 2020.

6.2 6.380.10.4

This was a full (GA) release of the CodeLess reference application for the DA14531/DA14585/586 line of products. AT commands include support for binary data exchange, security, events, handlers and non - volatile storage. Furthermore, SUOTA is supported as well. In addition to the CodeLess application itself, a host application and mobile phone application have been developed for CodeLess. A more detailed overview of CodeLess command set for both DA14585 and DA14531, the host application and the mobile phone application can be found at the CodeLess Reference application user manual.

This is a full (GA) release following the engineering release 6.380.9.10. In this version of CodeLess support for DA14586 has been added, the number of targets has increased to five to include an additional DA14531 standalone target, the full CodeLess name is shown in the advertising response and several smaller fixes have been made, including the use of the Bluetooth® address in the OTP memory, if an address is programmed and the addition of the watchdog timer. Furthermore, the latest SDK - 6.0.14.1114 has been ported to CodeLess. Information on new/updated features, fixes, improvements, known issues and known limitations is provided below.

6.3 New and Updated Features of 6.380.10.4

Table 3: 6.380.10.4 New Features

Feature Number	Description
1	Support for DA14586 in addition to DA14585 and DA14531. The internal flash of DA14586 is now supported and SUOTA files are provided for it.
2	Addition of a prefix (+PRINT) in the case of ATr+PRINT command so that the remote device can notify the application of printed messages.
3	Addition of unsolicited messages in case of ATrE and and ATr+ESC command so that the remote device can notify the application in changes in echo and escape sequences respectively
4	The CodeLess full name is now shown in the advertising response
5	The watchdog timer has been enabled

6.4 Fixes and Improvements since 6.380.9.10

Table 4: 6.380.10.4 Fixes and Improvements

Fix Number	Description
1	Restructuring of projects. One project with five targets now exists - one for DA14585, one for DA14586 and three for DA14531 (a dedicated project for datapump applications and two projects for standalone applications).
2	Porting to the latest 6.0.14.1114 SDK version.
3	Changes in folders structure. The sdk-585 folder has been renamed to sdk6. A binaries folder has been added where all the .hex/.bin files from all targets have been included. The secondary bootloader has been moved to the root folder. The .md files have changed to directories including an html readme version.
4	AT+IOCFG incorrect behavior with HRTBT mode in 585 where additional pins were set in heartbeat mode has been fixed.
5	SUOTA binary files for the DA14586 target have been included in the relevant

Fix Number	Description
	directory in addition to those of DA14531 and DA14585
6	AT+ADC command that was not working in DA14531 has been fixed
7	SUOTA failing with DA14531 module has been fixed
8	The ATI command prints a different string to differentiate between DA14585/DA14586 boards
9	The Bluetooth® address of the board is the one found in the OTP if available. Otherwise the address that is defined in the macro CFG_NVDS_TAG_BD_ADDRESS in the file da1458x_config_advanced.h will be used. A new macro has been defined - CFG_USE_GENERATED_BLUETOOTH_ADDRESS to change the behavior to the old one where a static random address was generated on boot.

6.5 Known Issues of 6.380.10.4

Table 5: 6.380.10.4 Known Issues

Issue Number	Description
1	ahtoi undefined behavior: when arguments are passed where numerical value is needed the input is not checked or sanitized. If i.e instead of a decimal value a string is passed such as the case for command AT+MEM=aaaaaa then this will be translated to AT+MEM=0
2	Due to memory constraints in DA14531 there are three different targets: Datapump and two standalone targets. The datapump target is optimized for binary transfers whereas the two standalone targets are better suited to use cases where CodeLess is connected to external sensors.
3	Handlers/commands error checking: The user must ensure that the AT commands passed as arguments in the AT+HNDL and AT+CMDSTORE commands are correct. No error checking or processing is performed other than stripping out space characters before or after the AT commands.
4	The first reconnection after pairing may be not be successful in DA14531 datapump.
5	In binary mode full duplex data transfer is not working properly
6	Toggling of flow control (first enabled and then disabled) results to data loss in binary mode
7	Spurious characters may be shown when waking up and before the +AWAKE string

6.6 Known Limitations of 6.380.10.4

Table 6: 6.380.10.4 Known Limitations

Issue Number	Description
1	Active role changing: if a connection is achieved with a specific role, if disconnected and change role a hard fault will occur when trying to send data. An ATR command (platform reset) is needed in order to change role and connect.
2	I2C 10 bit addressing is not supported.
3	max cmd slots is 99 (2 digits): can be fixed with a parser that will parse also commands for CMDSTORE.
4	It the spi flash memory is enabled the spi set of commands for interfacing with external sensors (AT+SPICGFG, AT+SPIRD, AT+SPIWR and AT+SPITR) are not available.
5	The bonding database size has been reduced in DA14531 targets to 2 as opposed to 5 in DA14585/DA14586 targets due to memory constraints

Issue Number	Description
6	Patch for the 1112/07 fixed SDK 6.0.14.1114 issue (Incorrect handling on reception of wrongly formed Security Manager Protocol PDU) has not been applied to DA14531 targets due to memory constraints.
7	The DIS service has been removed in DA14531 due to memory constraints
8	The commands AT+ADVRESP, AT+ADVDATA have been undefined in the DA14531 targets

Table 7: 6.380.10.4 SDK Code Changes

Change Number	Description
1	Add support for the internal flash of the 531 module in spi_flash.c and spi_flash.h
2	Various ram optimizations in platform files: - Initialization code has been moved to an execution region overlapping with BLE Rx/Tx buffers - ZI data can be placed over unused area of Tx buffers
3	Small changes in sdk/app_modules for 531 to the AT+RSSI command
4	Nonvolatile support has been added for handlers, events, bonding database and connection parameters in sdk/app_modules

6.7   6.380.9.10

Version 6.380.9.10 of CodeLess reference design was released on 7 Apr 2020.

6.7.1   Overview

This is an engineering release of the CodeLess reference application for the DA14531/DA14585 line of products. This was the second version for DA14585 and the first supporting the DA14531. Support for DA14580 was dropped in this version. Version 6.380.9.10 of CodeLess was significantly improved and expanded over the previous one. Binary data exchange, SUOTA and several additional commands including security, events, handlers and non - volatile storage were supported. In addition to the CodeLess application itself, a host application and mobile phone application were developed for CodeLess.

6.7.2   New and updated features of 6.380.9.10

Table 8: 6.380.9.10 New features

Feature Number	Description
1	Support for DA14531. Please note that support for DA14580 has been dropped.
2	A dedicated binary mode working through AT commands to support seamless exchange of data between CodeLess devices.
3	Several additional AT commands having to do with security, signal indication, pwm output, heartbeat, host sleep, flowcontrol, power level configuration, baud rate setup etc.
4	Events (output of a predefined string to the serial port) and handlers (execution of a set of pre-existing commands) on certain events.
5	Bonding database management (import/export entries, clear database, set persistency etc.) using dedicated AT commands.
6	Support for various security scenarios (secure connections, legacy pairing, just works, no security) through a new AT+SEC command.

Feature Number	Description
7	Addition of SUOTA - working with Dialog's existing mobile phone application. A set of precompiled files have been added within the release for testing.
8	Nonvolatile storage (spi flash) for certain commands (events, handlers, bonding database, connection parameters). Previous configuration is read on boot.

6.7.3 Fixes and Improvements since 6.380.8.4.0

Table 9: 6.380.9.10 Fixes and Improvements

Fix Number	Description
1	Restructuring of project sources. One project with three targets now exists - one for DA14585 and two for DA14531 (a dedicated project for datapump applications and a dedicated project for standalone applications)
2	Addition of more robust argument error checking to several commands
3	Porting to 6.0.12.1020 SDK version
4	Creation of a user manual that includes detailed information about the CodeLess commands, host application, mobile phone applications and tutorials.
5	Memory optimization for smaller memory footprint especially in the case of DA14531
6	The AT+CMDSTORE command handles spaces at the beginning and end of a command
7	Support of the CodeLess software through a host application and a mobile phone application

6.7.4 Known Issues of 6.380.9.10

Table 10: 6.380.9.10 Known Issues

Issue Number	Description
1	The AT+ADC command does not return a correct result for DA14531.
2	ahtoi undefined behavior: when arguments are passed where numerical value is needed the input is not checked or sanitized. If i.e instead of a decimal value a string is passed such as the case for command AT+MEM=aaaaaa then this will be translated to AT+MEM=0
3	Due to memory constraints in DA14531 there are two different targets: Datapump and standalone. The datapump target is optimized for binary transfers whereas the standalone target is better suited to use cases where CodeLess is connected to external sensors.
4	Handlers/commands error checking: The user must ensure that the AT commands passed as arguments in the AT+HNDL and AT+CMDSTORE commands are correct. No error checking or processing is performed other than stripping out space characters before or after the AT commands.
5	The first reconnection after pairing may be not be successful in DA14531 datapump.
6	In binary mode full duplex data transfer is not working properly
7	The DA14586 is not supported in this release
8	SUOTA does not work with the DA14531 module.

6.7.5   Known Limitations of 6.380.9.10

Table 11: 6.380.9.10 Known Limitations

Issue Number	Description
1	Active role changing: if a connection is achieved with a specific role, if disconnected and change role a hard fault will occur when trying to send data. An ATR command (platform reset) is needed in order to change role and connect.
2	I2C 10 bit addressing: Not supported.
3	max cmd slots is 99 (2 digits): can be fixed with a parser that will parse also commands for CMDSTORE.
4	It the spi flash memory is enabled the spi set of commands for interfacing with external sensors (AT+SPICGFG, AT+SPIRD, AT+SPIWR and AT+SPITR) are not available.

6.8   6.380.8.4.0

Version 6.380.8.4.0 of CodeLess reference design was released on 13 Sept 2018.

6.8.1   Overview

This was a full release of CodeLess reference design. It included several new features and improvements since the original version as reported below. More information can be found in the dialog products site (https://www.dialog-semiconductor.com/products/smartbondtm-codeless-commands).Please not that in the previous CodeLess version DA14531 was not supported.

6.8.2   New and Updated Features of 6.380.8.4.0

Table 12: 6.380.8.4.0 New Features

Feature Number	Description
1	Queuing of UART message to support parallel command paths (local, remote and sequencer).
2	Create generic at command parser, new local command sources can be easily added.
3	AT commands jump table
4	Error reporting mechanism and ATF command to turn on/off.
5	ATR command to trigger platform reset
6	Python lib for interacting with codeless devices over UART and BLE.

6.8.3   Fixes and Improvements since 1.0.1.001

Table 13: 6.380.8.4.0 Fixes and Improvements

Fix/Improvement Number	Description
1	Delayed wake up process has been changed. UART buffers are flushed before command parsing is started. Extra logic has been added to parser in order to have predictable command parsing after wake up.
2	I2C read when failed due to wrong device address/ register address / access rights would return garbage from previous read operations. An error is returned if i2c read operation is not successful.

Fix/Improvement Number	Description
3	On startup codeless device is peripheral role and starts advertising.
4	Change command interpreter logic to detect for incoming reply to support parallel command paths
5	Fix continuous timer cancel issue for 10 sec delay startup timer
6	Port to latest SDK version
7	Restructure project source (common src files for 580/585)
8	Add project readme
9	Add memory handling/ protection for requests that will overflow stack - Not yet supported for DA14580
10	AT+IOCFG command has an extra optional argument that can set a GPIO output pin immediately after configuration. i.e AT+IOCFG=10,4,1 will set GPIO P1_0 as output and high.
11	Restructure project for smaller binary size.

6.8.4   Known Issues of 6.380.8.4.0

Table 14: 6.380.8.4.0 Known Issues

Issue Number	Description
1	user_malloc: in 585 codeless can be built with this flag and handle memory overflow on runtime. 580 does not provide a ke_mem_check function in kernel api.
2	580 jtag issue: if connected on a device - while debugging if a breakpoint is put anywhere in the code then connection is lost.
3	ahtoi undefined behavior: when arguments are passed that a numerical value is needed the input is not checked or sanitized. If i.e instead of a decimal value a string is passed such as the case for command AT+MEM=aaaaaa then this will be translated to AT+MEM=0

6.8.5   Known Limitations of 6.380.8.4.0

Table 15: 6.380.8.4.0 Known Limitations

Issue Number	Description
1	Active role changing: if a connection is achieved with a specific role, if disconnected and change role a hardfault will occur when trying to send data. An ATR command (platform reset) is needed in order to change role and connect.
2	I2C 10 bit addressing: Not supported.
3	max cmd slots is 99 (2 digits): can be fixed with a parser that will parse also commands for CMDSTORE.

Appendix A Software Versioning Rules

This describes the software version numbers and does not apply to documentation version numbers (as found in the footer of this document).

Each software version number string consists of four numbers: MAJOR. BRANCH. MINOR. and BUILD.

#MAJOR: It is increased (by one only) if the project undergoes a major modification, for example major ROM changes. It usually changes only when the project sources undergo major restructuring affecting most of the repository. It is initialized at 1.

#BRANCH: Used in the case of concurrent projects that for special reasons need to be spun off the major repository. It corresponds to different versions of the repository code that have to be supported concurrently. In this case each branch number corresponds to a different GIT branch. The basic project has BRANCH id 0.

#MINOR: Odd numbers indicate Engineering (or Patch or Binary) versions, even numbers indicate Full release versions or Release Candidates of Full versions. Each Full release increases this number by one. After the Full release, the number is increased by one again. Therefore, Project releases correspond to release numbers like 2.0.1.xxx, 2.0.2.xxx. etc. The #MINOR number is initialized at 1.

#BUILD: The # BUILD number increases by one at every repository update and thus indicates the total number of changes since repository initialization. The BUILD number is initialized at 1.

Document Revision History

This section summarizes the changes made to this document and not to the Software that this document describes.

Revision	Date	Description
1.3	09-Sep-2020	Full (GA) release 6.380.12.6
Change details:		
● Updated the document to include information about full (GA) release 6.380.12.6		
1.2	04-June-2020	Full (GA) release 6.380.10.4
Change details:		
● Updated the document to include information about full (GA) release 6.380.10.4		
1.1	07-Apr-2020	Engineering release 6.380.9.10
Change details:		
Updated the document to include information about the engineering release 6.380.9.10		
1.0	13 - Sep - 2018	Initial version of this document

Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.

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