Release Notes

DA1458x/DA1453x-CodeLess

SW-B-023

Abstract

This document contains the release notes for Renesas's CodeLess reference application version 6.380.18.63.

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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
CI	Connection Interval

2 Release Data

Table 1: Information Table

Software	DA1458x/DA1453x CodeLess reference application
Device Number	DA14585, DA14586, DA14531-00, DA14531-01,DA14531MOD, DA14535
Device Type	
Device Revision	
Operating System	
Operating System Version	
Software Release Date	05-Dec-2023
Software Version Number	6.380.18.63
Software SDK Number	6.0.20.1338
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. The full path to the license file is DA145xx_CODELESS\6.380.18.63\sdk6\doc.

4 Related Documentation and References

[1] DA14531, Datasheet, Revision 3.6, Renesas

[2] DA14585, Datasheet, Revision 3.4, Renesas

[3] UM-B-140, DA145XX CodeLess User Manual.

[4] DA14531MOD, Datasheet, Revision 3.3, Renesas

5 Release Description

5.1 Overview

This is a full (GA) release of the CodeLess reference application for the DA14531-00 / DA14531-01/ DA14531MOD / DA14535 / DA14585 / DA14586 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, both host and mobile phone applications have been developed for CodeLess. A more detailed overview of CodeLess command set for DA14585/DA14586, DA14531/DA14531-01/DA14531MOD and DA14535, the host application and the relevant mobile phone applications can be found at the CodeLess Reference application manual online.

This is a full (GA) release following the previous full (GA) release 6.380.16.55. In this version of CodeLess a few fixes and improvements have taken place since the previous release. Apart from migrating CodeLess to the latest sdk (6.0.20.1338) an additional target has been added supporting the DA14535 IC. As of this release, the Arm GCC compiler along with SmartSnippets Studio® can be used to build and run the CodeLess reference design. Several small fixes and improvements have taken place as well. As always focus has been given to reliability, stability and interoperability with both state-of-the-art and older mobile phone models. Detailed information is provided below.

5.2 New and Updated Features of 6.380.18.63

Table 2: 6.380.18.63 Updated Features

Feature Number	Description
1	Additional targets: A new target has been added (DA14535) supporting the CodeLess reference design in DA14535 IC.
2	GCC support for selected CodeLess targets: The Arm GCC compiler and the SmartSnippets Studio® can be used to build and run CodeLess for DA14585/DA14586, DA14531-01 and DA14535 targets. No DA14531-00 targets are supported due to memory constraints.
3	Dynamic update of the CodeLess service database permissions: The AT+SEC command selects the security scenario dynamically. However, until now the CodeLess service database permissions were not updated. In this release the database permissions of the CodeLess service are changed in accordance with the security scenario.

5.3 Fixes and Improvements since 6.380.16.55

Table 3: 6.380.18.63 Fixes and Improvements

Fix Number	Description
1	SDK: The CodeLess reference design has been migrated to the latest sdk (6.0.20.1338)
2	Pin configuration: Unused and excessive definitions have been cleaned up in user_periph_setup.h file
3	Issuing an AT command during the transmission of an unsolicited message: This action would result in a watchdog reset previously. It has been fixed.
4	Secondary bootloader: The default secondary bootloader of the sdk is used in CodeLess as opposed to using a dedicated secondary bootloader previously
5	The copyright notice has been updated from Dialog to Renesas in all CodeLess header and source files

Fix Number	Description
6	Binary mode on connection: Introduce the CFG_ENTER_BINARY_MODE_ON_CONNECTION macro that allows CodeLess to enter binary mode automatically when connected. The macro is undefined by default
7	AT+SEC=1 DA14531-00 reset issue: Previously a reset would take place on certain occasions if an attempt to bond was made with AT+SEC=1 setting. The issue has been fixed
8	Compilation issue when flow control macros are undefined: When both hardware flow control and flow control command are undefined a compilation error was occurring. The issue has been fixed.
9	Error on binary conversion: After the project build, an elf to binary file conversion takes place using the fromelf.exe application. This process would fail in machines where the Arm compiler v5 is not installed due to a wrong path. The issue has been fixed.

5.4 Known Issues of 6.380.18.63

Table 4: 6.380.18.63 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	Different targets in DA14531-00: Due to memory constraints in DA14531-00 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 not be successful in DA14531-00/DA14531-01 datapump.
5	A full duplex data file streaming operation between a codeless central and codeless peripheral device may cause one or both devices to stop working
6	Spurious characters may be shown when waking up and before the +AWAKE string
7	After the +READY indication is printed to the console a timeout of 20 ms is necessary for all commands to be available
8	SUOTA will fail consistently with the following phones: Oppo Reno phone with Android operating system version 10 One Plus Nord and Realme 8 both with Android operating system version 10
9	Pairing with Motorola Moto X with Android version 5 will fail even in legacy mode due to the IO capabilities of the mobile phone.
10	Data loss during binary data transfer in iPhone 6 with iOS 10.0 may be observed
11	If the AT+CMDPLAY command is mixed with recurring commands such as timers the intermediate results will be printed multiple times as long as the timers are active.
12	SUOTA transfer in DA14531-00 may take longer to finish than usual with Huawei P20

5.5 Known Limitations of 6.380.18.63

Table 5: 6.380.18.63 Known Limitations

Issue Number	Description
1	I2C 10 bit addressing is not supported.
2	max cmd slots is 99 (2 digits): can be fixed with a parser that will parse also commands for CMDSTORE.
3	If 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.
4	The bonding database size in DA14531-00/DA14531-01 targets has been reduced to 1 due to memory constraints
5	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.
6	The commands AT+ADVRESP, AT+ADVDATA have been undefined in the DA14531 targets due to memory constraints
7	In DA14585 the Uart Rx pin must be asserted low for at least 2 LPC cycles for a guaranteed wakeup (and reception of the +AWAKE event).
8	In the DA14531-01 target the central is not supported by the Bluetooth® stack and therefore no central functionality is available
9	The DA14531-00 targets are not supported in Arm GCC compiler and SmartSnippets Studio® due to memory constraints
10	The AT+CONPAR command has been undefined in DA14531-01 target in GCC due to memory constraints
11	The Device Information Service has been removed from DA14531 targets due to memory constraints
12	Using ATr commands within the AT+CMDSTORE command is not supported

6 Release History

6.1 6.380.16.55

Version 6.380.16.55 of CodeLess reference design was released on 29 Nov 2022.

6.1.1 Overview

This was a full (GA) release following the previous full (GA) release 6.380.14.22. In this version of CodeLess a few fixes and improvements took place since the previous release. CodeLess started using compiler version six resulting in a smaller binary and thus more available ram especially for the DA14531 targets. Security was added to the central device in both DA14531 and DA14585 targets. A new datapump target was added supporting the DA14531-01 IC. Finally focus was given on reliability, stability and interoperability with both state of the art and older mobile phone models. Detailed information about this release is provided below.

6.1.2 New and Updated Features of 6.380.16.55

Table 6: 6.380.16.55 Updated Features

Feature Number	Description
1	Bonding support has been added for CodeLess central. Due to RAM constraints in DA14531 targets the feature is not enabled by default. Other features may have to be

Feature Number	Description
	disabled for the feature to fit in available RAM. The feature can be enabled by defining the CFG_BOND_CMD_SUPPORTED macro which is undefined by default.
2	A new target has been added (DA14531-01 datapump) supporting the CodeLess datapump flavor in DA14531-01 ICs.
3	CodeLess pin debug feature: The CFG_PIN_CHANGE_ON_NMI_OR_HARDFAULT macro, undefined by default, controls whether a pin will change status on next reboot if a nmi or hardfault occurs.

6.1.3 Fixes and Improvements since 6.380.14.22

Table 7: 6.380.16.55 Fixes and Improvements

Fix Number	Description
1	Compiler version: The CodeLess reference design has been migrated from compiler version five to compiler version six
2	SDK: The CodeLess reference design has been migrated to the latest sdk (6.0.18.1182)
3	Unsupported flashes: CodeLess will now assume a default size for flashes that are not included in the known flashes list
4	at_command_characteristics_t struct: Code has been refactored and excess fields within the struct have been removed
5	Unused files: The files app_non_volatile_storage.c/h files previously located at the src directory have been removed since they were not used by CodeLess
6	AT+IEBNDE command: This command would cause a reset when issued immediately after the +READY message. The issue has been fixed.
7	I2C: The I2C api is being used now instead of direct register accesses for the I2C related commands
8	TMRSTART command: Previously the maximum value of the delay could be 255*10ms.This has been fixed.
9	AT+BDADDR command: The command reported a wrong address immediately after reset.
10	CodeLess name: The CodeLess advertise name has been modified to CLv2 - Codeless to be consistent with the Bluetooth® specification.
11	Secondary bootloader: The dedicated CodeLess secondary bootloader has been modified to support larger images.
12	SUOTA: The SUOTA buffer has been reduced to 128 bytes due to memory constraints.
13	DIS: The Device Information Service that was previously removed from DA14531 targets due to memory constraints has been restored
14	Documentation: The help files supporting the release have been removed and have been added to the online documentation
15	Switching from central to peripheral: Services are no longer lost when switching role from central to peripheral.
16	Commands received from multiple interfaces: Previously the responses to commands received from different interfaces (e.g. from Bluetooth and uart) were written to the outbound characteristic without an arbitration mechanism resulting in overwrites. A queue has been implemented, controlled by the OUTBOUND_CHAR_QUEUE macro, to ensure that responses are updated when the central reads the previous response.
17	Security: The default security scenario has been changed to no security. The security level is now determined by the AT+SEC at command regardless of a pin entry (default pin is 000000). The AT+PIN command is used to enter a pin as opposed to previously where a security request was sent if the pin was non - zero.
18	Watchdog timer: Previously the watchdog was enabled originally but was disabled during application execution. Currently it always stays enabled.

Fix Number	Description
19	Binary mode during sleep: In the scenario where the CodeLess peripheral is connected and has entered sleep mode (through the AT+SLEEP=1 command) an attempt to enter binary mode would result in a reboot. The issue has been fixed.

6.1.4 Known Issues of 6.380.16.55

Table 8: 6.380.16.55 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	A full duplex data file streaming operation between a codeless central and codeless peripheral device may cause one or both devices to stop working
6	Spurious characters may be shown when waking up and before the +AWAKE string
7	After the +READY indication is printed to the console a timeout of 20 ms is necessary for all commands to be available
8	SUOTA will fail consistently in Oppo Reno phone with Android 10 operating system
9	Pairing with Motorola Moto X with Android version 5 will fail even in legacy mode due to the IO capabilities of the mobile phone.
10	Data loss during binary data transfer in iPhone 6 with iOS 10.0 may be observed
11	If the AT+CMDPLAY command is mixed with recurring commands such as timers the intermediate results will be printed multiple times as long as the timers are active.
12	SUOTA transfer in DA14531 may take longer to finish than usual with Huawei P20
13	Issuing an AT command during the transmission of an unsolicited message will result in a watchdog reset

6.1.5 Known Limitations of 6.380.16.55

Table 9: 6.380.16.55 Known Limitations

Issue Number	Description
1	I2C 10 bit addressing is not supported.
2	max cmd slots is 99 (2 digits): can be fixed with a parser that will parse also commands for CMDSTORE.
3	If 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.
4	The bonding database size in DA14531 targets is 2 as opposed to 5 in DA14585/DA14586 targets due to memory constraints

Issue Number	Description
5	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.
6	The commands AT+ADVRESP, AT+ADVDATA have been undefined in the DA14531 targets due to memory constraints
7	In DA14585 the Uart Rx pin must be asserted low for at least 2 LPC cycles for a guaranteed wakeup (and reception of the +AWAKE event).
8	In the DA14531-01 target the central is not supported by the Bluetooth® stack and therefore no central functionality is available

6.2 6.380.14.22

Version 6.380.14.22 of CodeLess reference design was released on 17 May 2021.

6.2.1 Overview

This was a full (GA) release following the previous full (GA) release 6.380.12.6. In this version of CodeLess the behavior of existing commands has been improved. A limited set of new features has been added, having to do with scanning, Bluetooth LE® flow control and pairing. Finally focus has been given on reliability, stability and interoperability with both state of the art and older mobile phone models. Detailed information is provided below.

6.2.2 New and Updated Features of 6.380.14.22

Table 10: 6.380.14.22 Updated Features

Feature Number	Description
1	AT+GAPSCAN command behavior: The command starts a Bluetooth device scan and prints the results to the console. It has been updated to print all scanned Bluetooth devices and not only CodeLess ones. In addition, the command prints the scan responses of the scanned devices in ascii/hex formats depending on whether the response is printable or not.
2	Additional argument for the AT+SEC command: The command sets the current security/pairing mode. The number of modes has been increased from 4 to 5 where the last mode (AT+SEC=4) will attempt to pair with the highest level of security (secure connections) and will revert to legacy pairing if secure connections pairing mode is not supported by the remote peer. This is now the default case.
3	Bluetooth flow control: The number of packets exchanged in one connection interval has been limited to one. This mechanism ensures that the CodeLess devices, when in peripheral mode, will not suffer from heap exhaustion if the central sends many packets within one connection interval. Due to the implementation of this mechanism the throughput has been reduced.

6.2.3 Fixes and Improvements since 6.380.12.6

Table 11: 6.380.14.22 Fixes and Improvements

Fix Number	Description
1	I2C commands issue in DA14531-00: The I2C commands in the DA14531-00 caused the device to hang previously.
2	AT+PWRLVL disconnection issue: Issuing the AT+PWRLVL command when the CodeLess was connected could result in frequent disconnections in DA14531-00.
3	Codeless name in scan responses: The CodeLess returns the name found in USER_DEVICE_NAME macro in scan responses as opposed to previous versions

Fix Number	Description
	where the name has hardcoded.
4	Default connection parameters: The connection interval and the supervision timeout values have been updated from 12.5 ms to 15 ms and from 5 sec to 2.5 sec respectively. The parameters found in user_config.h are being used instead of hardcoded ones.
5	Flash parameters storage: Certain commands store parameters to an external flash if one is available. The flash storage mechanism was not working as expected and has been fixed
6	AT+CONPAR behavior when <pu_action>=2: The command applies the parameter update with the provided parameters and does not update the stored parameters as expected according to the documentation. Previously the CodeLess device stored the parameters and disabled the parameter update.
7	AT+ADVSTOP/AT+ADVSTART execution through command sequencer: Execution of the advertising start/stop commands was not previously possible using the AT+CMDPLAY command.
8	SPI commands for external sensors: When the spi flash memory is disabled, the spi interface is available for interfacing with external sensors using the spi command set (AT+SPICGFG, AT+SPIRD, AT+SPIWR and AT+SPITR). In the DA14531-00 standalone target the commands were not previously included if the spi flash was disabled.
9	AT+CMDPLAY behavior: All intermediate responses from commands that are executed through the AT+CMDPLAY command are printed to the console
10	AT+BINREQACK timing: If the command was issued after the +CONNECTED indication had been printed to the console but before the "COMMAND MODE SUPPORTED"/"BINARY MODE SUPPORTED" notifications would be printed, the device would hang. This issue has been fixed.
11	AT+GAPCONNECT report on failure: The command now reports ERROR when the connection attempt is unsuccessful as opposed to the previous behavior where the indication was received when a new command was issued.
12	Flow control toggling and loss of data: Toggling of flow control (first enabled and then disabled) resulted in data loss in binary mode. It now works as expected.
13	Active role changing: The CodeLess device can be in one of three roles Peripheral, Central and Broadcaster. Changing between the roles is now seamless as opposed to the previous behavior where an ATR command (platform reset) was necessary in order to change the role.
14	Debugger pin assignment: Previously it was possible to assign certain functions (e.g. I2C, heartbeat etc) to the debugger pins. Now the debugger pins are guarded, and assignment is not allowed if the debugger is connected. An ERROR will be returned.
15	Baud rate change in targets with binary mode: Changing the baud rate in command mode using the AT+BAUD command will also change the baud rate used in binary mode.
16	Command/Binary mode notifications strings: The "COMMAND MODE SUPPORTED" and "BINARY MODE SUPPORTED" strings are now printed when a notification arrives from the peer device as opposed to the previous behavior where a fixed timeout of 2 seconds had to elapse before these strings would be printed.
17	AT+GAPDISCONNECT behavior: The command was not previously returning OK after the +DISCONNECTED message.

6.2.4 Known Issues of 6.380.14.22

Table 12: 6.380.14.22 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

Issue Number	Description
	translated to AT+MEM=0
2	Due to memory constraints in DA14531-00 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 not be successful in DA14531-00/DA14531-01 datapump.
5	A full duplex data file streaming operation between a codeless central and codeless peripheral device may cause one or both devices to stop working
6	Spurious characters may be shown when waking up and before the +AWAKE string
7	After the +READY indication is printed to the console a timeout of 20 ms is necessary for all commands to be available
8	SUOTA will fail consistently in Oppo Reno phone with Android 10 operating system
9	Pairing with Motorola Moto X with Android version 5 will fail even in legacy mode due to the IO capabilities of the mobile phone.
10	Data loss during binary data transfer in iPhone 6 with iOS 10.0 may be observed
11	If the AT+CMDPLAY command is mixed with recurring commands such as timers the intermediate results will be printed multiple times as long as the timers are active.
12	SUOTA transfer in DA14531-00 may take longer to finish than usual with Huawei P20

6.2.5 Known Limitations of 6.380.14.22

Table 13: 6.380.14.22 Known Limitations

Issue Number	Description
1	I2C 10 bit addressing is not supported.
2	max cmd slots is 99 (2 digits): can be fixed with a parser that will parse also commands for CMDSTORE.
3	If 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.
4	The bonding database size in DA14531 targets is 2 as opposed to 5 in DA14585/DA14586 targets due to memory constraints
5	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 DA14531-00 targets due to memory constraints.
6	The DIS service is not available in DA14531 due to memory constraints
7	The commands AT+ADVRESP, AT+ADVDATA have been undefined in the DA14531-00 targets due to memory constraints
8	In DA14585 the Uart Rx pin must be asserted low for at least 2 LPC cycles for a guaranteed wakeup (and reception of the +AWAKE event).

6.3 6.380.12.6

Version 6.380.12.6 of CodeLess reference design was released on 10 Sep 2020.

6.3.1 Overview

This was 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.

6.3.2 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.

6.3.3 Fixes and Improvements since 6.380.10.4

Table 14: 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.

6.3.4 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

6.3.5 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.

6.4 6.380.10.4

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

6.4.1 Overview

This was a full (GA) release of the CodeLess reference application for the DA14531-00/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 DA14531-00, 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 DA14531-00 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.

6.4.2 New and Updated Features of 6.380.10.4

Table 15: 6.380.10.4 New Features

Feature Number	Description
1	Support for DA14586 in addition to DA14585 and DA14531-00. The internal flash of DA14586 is now supported and SUOTA files are provided for it.

Feature Number	Description
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

6.4.3 Fixes and Improvements since 6.380.9.10

Table 16: 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 DA14531-00 (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 directory in addition to those of DA14531-00 and DA14585
6	AT+ADC command that was not working in DA14531-00 has been fixed
7	SUOTA failing with DA14531MOD 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.

6.4.4 Known Issues of 6.380.10.4

Table 17: 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 DA14531-00 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

Issue Number	Description
	characters before or after the AT commands.
4	The first reconnection after pairing may be not be successful in DA14531-00 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

6.4.5 Known Limitations of 6.380.10.4

Table 18: 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 DA14531-00 targets to 2 as opposed to 5 in DA14585/DA14586 targets due to memory constraints
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 DA14531-00 targets due to memory constraints.
7	The DIS service has been removed in DA14531-00 due to memory constraints
8	The commands AT+ADVRESP, AT+ADVDATA have been undefined in the DA14531-00 targets

Table 19: 6.380.10.4 SDK Code Changes

Change Number	Description
1	Add support for the internal flash of the DA14531MOD 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

6.5 6.380.9.10

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

6.5.1 Overview

This was an engineering release of the CodeLess reference application for the DA14531-00/DA14585 line of products. This was the second version for DA14585 and the first supporting the DA14531-00. 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.

6.5.2 New and updated features of 6.380.9.10

Table 20: 6.380.9.10 New features

Feature Number	Description
1	Support for DA14531-00. 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.
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.

6.5.3 Fixes and Improvements since 6.380.8.4.0

Table 21: 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 DA14531-00 (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 DA14531-00
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

6.5.4 Known Issues of 6.380.9.10

Table 22: 6.380.9.10 Known Issues

Issue Number	Description
1	The AT+ADC command does not return a correct result for DA14531-00.
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 DA14531-00 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 DA14531-00 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 DA14531MOD

6.5.5 Known Limitations of 6.380.9.10

Table 23: 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.

6.6 6.380.8.4.0

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

6.6.1 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 note that in the previous CodeLess version DA14531-00 was not supported.

6.6.2 New and Updated Features of 6.380.8.4.0

Table 24: 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.

6.6.3 Fixes and Improvements since 1.0.1.001

Table 25: 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.
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.

6.6.4 Known Issues of 6.380.8.4.0

Table 26: 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

Issue Number	Description
	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

6.6.5 Known Limitations of 6.380.8.4.0

Table 27: 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
1.6	05-Dec-2023	Full (GA) release 6.380.18.63
Change details: ● Updated the document to include information about full (GA) release 6.380.18.63		
1.5	29-Nov-2022	Full (GA) release 6.380.16.55
Change details: ● Updated the document to include information about full (GA) release 6.380.16.55 ● Migrated the document to the Renesas template format		
1.4	17-May-2021	Full (GA) release 6.380.14.22
Change details: ● Updated the document to include information about full (GA) release 6.380.14.22		
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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