



Z-Wave and Z-Wave Long Range 700 SDK 7.16.3.0 GA Gecko SDK Suite 3.2 October 13, 2021

Z-Wave and Z-Wave Long Range 700 are designed to meet the demands of the future smart home, where increasing needs for more sensors and battery-operated devices require both long range and low power. Context-aware environments are the next evolution in the smart home market, and they require technologies that have been optimized specifically for these applications.

100% Interoperable: Every product in the Z-Wave ecosystem works with every other product, regardless of type, brand, manufacturer or version. No other smart home/IoT protocol can make this claim.

Best-in-Class Security: Z-Wave's Security 2 (S2) framework provides end-to-end encryption and the most advanced security for smart home devices and controllers. Homes with S2 Z-Wave devices are virtually un-hackable.

SmartStart Easy Installation: SmartStart radically simplifies the installation of smart devices by using QR code scans for uniform, trouble-free setup. Devices and systems can be pre-configured dramatically easing deployments.

Backwards-Compatible: Z-Wave certification mandates backward-compatibility. The very first Z-Wave devices on the market, more than ten years old still perform as intended in networks with the latest Z-Wave technologies.

For more information about the certification status of Z-Wave and Z-Wave Long Range 700 SDK v7.16.3 GA, see section [7 Product Life Cycle and Certification](#).

These release notes cover SDK version(s):

- 7.16.3.0 GA released October 13, 2021
- 7.16.2.0 GA released September 8, 2021
- 7.16.1.0 GA released July 21, 2021
- 7.16.0.0 Pre-Certified GA released June 16, 2021

Compatibility and Use Notices

For more information about security updates and notices, see the Security chapter of the Gecko Platform Release notes installed with this SDK or on the [Silicon Labs Release Notes page](#). Silicon Labs also strongly recommends that you subscribe to Security Advisories for up-to-date information. For instructions, or if you are new to the Z-Wave 700 SDK, see [Using This Release](#).



KEY FEATURES

- Optimized Z-Wave Long Range dynamic transmit power algorithm
- Faster OTA firmware update improving battery lifetime
- Support of Z-Wave Long Range Radio Boards BRD4207A (RZ13) and BRD4206A (ZG14)
- Support of Z-Wave Long Range 20 dBm Radio Boards BRD4209A (RZ13) and BRD4208A (ZG14)
- All Apps are Z-Wave and Z-Wave Long Range certified based on 2021A
- UL 1023 recognition for Safety Household Burglar-Alarm System Units
- New pre-certified Multilevel Sensor app
- Implementation of Configuration and Multilevel Sensor Command Class
- New Z-Wave PC-based Controller v5.52 supporting Z-Wave Long Range
- Compiler upgraded to GCC version 10.2

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1 Z-Wave Protocol

1.1 New Items

None

1.2 Improvements

None

1.3 Fixed Issues

Fixed in release 7.16.3.0 GA

ID #	Description
741413	The function handleAppCommand in the protocol interface is missing de-referencing of parameters bStatus and bPullFromQueueAfterHandling. An erroneous status can be sent and the message can unintentionally be removed from messageQueue. This bug was introduced in v7.16.2.

Fixed in release 7.16.2.0 GA

ID #	Description
729384	Max. Tx power issue when using 14 and 20 dBm on Long Range.

Fixed in release 7.16.1.0 GA

ID #	Description
473714	The Tx power for broadcast frames is not reduced correctly on Z-Wave frames. This can result in unstable inclusion when doing direct range inclusion of end nodes on the edge of range.
715329	Power level in test frame is not correct. The Tx power set in the NOP_POWER frame is wrong when sending with ZW_REDUCED_TX_POWER. This bug will cause the ack for the NOP_POWER to be sent with too high (illegal) Tx power and could cause products to fail RF approval.
712210	Replication can infrequently fail during controller shift if there are excessive routing retries. Timeout extended.
714433	Battery-operated devices can fail to go to sleep after periodic wakeup.

Fixed in release 7.16.0.0 Pre-Certified GA

ID #	Description
409803	PER (Packet Error Rate) reduced to below 1% for FLiRS nodes. However, FLiRS idle current has increased as a result of improved PER.
710891	Z-Wave Long Range frames sent with broadcast destination ID must use the maximum Tx power. However, the dynamically calculated Tx power is used instead.
700485	Z-Wave devices respond to a Request_Node_Info multicast.
656604	Z-Wave Long Range Application can have more than one destination in the Lifeline association group.
655801	Z-Wave Long Range controller will acknowledge and answer a Request Node Information frame with a foreign HomeID if the destination NodeID in the frame matches a virtual node in the controller.

1.4 Known Issues in the Current Release

Issues in bold were added since the previous release. If you have missed a release, recent release notes are available on <https://www.silabs.com/products/software>.

ID #	Description	Workaround
355095	In small networks Assign Return Routes will only generate direct range or one-hop routes even though multi-hop routes are possible.	None
361273	Transport Service is used when it is necessary to split a frame in two parts due to size. However, Transport Service does not forward RSSI information from the lower layers but only routing information. The RSSI value is the difference between LWR RSSI and background RSSI. As a consequence it is not possible to use RSSI for large frames handled by Transport Service in a network health calculation.	None

1.5 Deprecated Items

None

1.6 Removed Items

None

2 Z-Wave Plus V2 Application Framework

2.1 New Items

None

2.2 Improvements

None

For a detailed description of application development using the Z-Wave Plus V2 Framework, refer to *INS14259: Z-Wave Plus V2 Application Framework SDK7*.

2.3 Fixed Issues

Fixed in release 10.16.2.0 GA

ID #	Description
400114	Apps builds with warnings.

Fixed in release 10.16.1.0 GA

ID #	Description
708385	End device answers non-secure Multicast messages. When operating non-securely and a controller sends a supervision-encapsulated Multilevel Switch Set () then the end device answers the multicast message erroneously.
673210	Store and return Node ID to Application JobStatus Callbacks to get correct information about destination Node Id and transmission status. It's difficult to know if the transmission of a particular associated node was successful when using associations for more than one node.
720346	A Z-Wave Long Range node must only support the Lifeline Association group and it is only allowed to define one node ID, typically configured to the gateway destination.
722786	Firmware Update Meta Data CC doesn't send a Status Report in case update process was aborted.

Fixed in release 10.16.0.0 Pre-Certified GA

ID #	Description
697116	BRD420xBoardInit() also sets pins on boards without SAW filters.
691100	Potential buffer overruns in agi.c and ZW_TransportMulticast.c.

2.4 Known Issues in the Current Release

Issues in bold were added since the previous release. If you have missed a release, recent release notes are available on <https://www.silabs.com/products/software>.

ID #	Description	Workaround
369430	All S2 multicast frames are sent using verified delivery S2_TXOPTION_VERIFY_DELIVERY whether or not a response is expected.	Change source code depending on the frame sent.
473723	True status doesn't report correctly if there are multiple instances like colors (in Color Switch CC), endpoints, etc.	None
727212	OTA Firmware Update can infrequently fail to acknowledge a Activation Set Command.	Delay firmware update 500 msec to allow sending routed acknowledge.

2.5 Deprecated Items

None

2.6 Removed Items

None

3 Certified Applications

3.1 Door Lock Key Pad

3.1.1 New Items

None

3.1.2 Improvements

None

3.1.3 Fixed Issues

None

3.1.4 Known Issues in the Current Release

Issues in bold were added since the previous release. If you have missed a release, recent release notes are available on <https://www.silabs.com/products/software>.

ID #	Description	Workaround
652906	RSSI measurements on classic channels fail after reset or power cycle.	None

3.1.5 Deprecated Items

None

3.1.6 Removed Items

None

3.2 LED Bulb

3.2.1 New Items

None

3.2.2 Improvements

None

3.2.3 Fixed Issues

None

3.2.4 Known Issues in the Current Release

None

3.2.5 Deprecated Items

None

3.2.6 Removed Items

None

3.3 Power Strip

3.3.1 New Items

None

3.3.2 Improvements

None

3.3.3 Fixed Issues

Fixed in release 10.16.1.0 GA

ID #	Description
708416	Supervision Report reported duration is wrong. Initiate a supervision session of 2 minutes using a Supervision Get (Multilevel Switch Set (Duration = 0x78 / 120 seconds). The device answers Supervision Report (working = 0x80). 0x80 means 1 minute, despite doing a 2 minutes transition.
702319	Power strip does not send correct True Status updates for Multilevel Switch on EP2 after a transition. If a controller node establishes an Endpoint association on the root device's lifeline association group (Multi channel Association Set with MARKER followed by a NodeID, Ep 0), the PowerStrip does not always send Multi Channel encapsulated Multilevel Switch Reports when pressing BTN2 to actuate the dimmer locally.

3.3.4 Known Issues in the Current Release

None

3.3.5 Deprecated Items

None

3.3.6 Removed Items

None

3.4 Sensor PIR

3.4.1 New Items

None

3.4.2 Improvements

None

3.4.3 Fixed Issues

Fixed in release 10.16.1.0 GA

ID #	Description
717090	Sensor PIR must stay awake as long as the firmware update process is running.
715397	Assure data is written to NVM3 before going to EM4 sleep. Can result in unintentional current consumption spikes.

Fixed in release 10.16.0.0 Pre-certified GA

ID #	Description
655801	A Z-Wave virtual node replies to a frame sent from a foreign network having the same node ID.

3.4.4 Known Issues in the Current Release

None

3.4.5 Deprecated Items

None

3.4.6 Removed Items

None

3.5 Switch On/Off

3.5.1 New Items

None

3.5.2 Improvements

None

3.5.3 Fixed Issues

None

3.5.4 Known Issues in the Current Release

None

3.5.5 Deprecated Items

None

3.5.6 Removed Items

None

3.6 Wall Controller

3.6.1 New Items

None

3.6.2 Improvements

None

3.6.3 Fixed Issues

None

3.6.4 Known Issues in the Current Release

None

3.6.5 Deprecated Items

None

3.6.6 Removed Items

None

4 Pre-Certified Applications

The pre-certified applications will not be formally certified but certification tests have been performed based on CTT v3. Refer to INS14816: How to Use Pre-Certified Apps, for details.

4.1 Multilevel Sensor

4.1.1 New Items

New in release 10.16.0.0 Pre-certified GA

New Multilevel Sensor Device Type supporting Multilevel Sensor and Configuration Command Classes.

4.1.2 Improvements

None

4.1.3 Fixed Issues

Fixed in release 10.16.1.0 GA

ID #	Description
719042	Warnings fixed when building in Simplicity Studio environment.

4.1.4 Known Issues in the Current Release

None

4.1.5 Deprecated Items

None

4.1.6 Removed Items

None

5 Serial API Bridge Controller

Beginning with version 7.16, when backing up and restoring a SerialAPI via the FUNC_ID_NVM_BACKUP_RESTORE, the SerialAPI will automatically upgrade the protocol non-volatile memory (NVM) to the latest version. Any backup made of a 7.16 or later SerialAPI can be restored to any 7.16 or future version of the SerialAPI without any manual upgrade of the protocol NVM being necessary.

Unchanged serial interface version 8.

5.1 New Items

None

5.2 Improvements

None

5.3 Fixed Issues

None

5.4 Known Issues in the Current Release

Issues in bold were added since the previous release. If you have missed a release, recent release notes are available on <https://www.silabs.com/products/software>.

ID #	Description	Workaround
387655	Pre-built SerialAPI delivered in Simplicity Studio will not work if the ZG14 bootloader is also flashed to the radio board.	Use serialAPI without bootloader or, if OTW support is needed, contact the Z-Wave Apps team for workaround.

5.5 Deprecated Items

None.

5.6 Removed Items

None

6 Using This Release

This release contains the following

- Z-Wave Plus V2 Application Framework
- Z-Wave Certified Applications for a broad range of smart home applications
- Z-Wave Protocol and Serial API Applications

If you are a first-time user, Z-Wave documentation is installed with the SDK. See [INS14280: Z-Wave 700 Getting Started for End Devices](#), [INS14278: How to Use Certified Apps in Z-Wave 700](#), and [INS14281: Z-Wave 700 Getting Started for Controller Devices](#) for instructions.

This SDK depends on a Gecko Platform. The Gecko Platform code provides functionality that supports protocol plugins and APIs in the form of drivers and other lower layer features that interact directly with Silicon Labs chips and modules. Gecko Platform components include EMLIB, EMDRV, RAIL Library, NVM3, and mbedTLS. Gecko Platform release notes are available through Simplicity Studio's Launcher Perspective.

6.1 Installation and Use

Order a Z-Wave 700 Wireless Starter kit. The kit offers the easiest and fastest way to start evaluation and development of your own Z-Wave 700 mesh application. It provides a single world-wide development kit for both end devices and gateways with multiple radio boards, in which to enable developers to create a mesh network and evaluate the Z-Wave 700 module.

Download and install Simplicity Studio from <https://www.silabs.com/support/getting-started/mesh-networking/z-wave/z-wave-700>. Installation instructions are available in the [Simplicity Studio 5 User's Guide](#). Simplicity Studio ensures that most software and tool compatibilities are managed correctly. Install software and board firmware updates promptly when you are notified.

After Simplicity Studio installs, select **Install By Product Group**, check **Z-Wave**, and follow the steps to install the SDK.

Documentation specific to the SDK version is installed with the SDK. API references and other information about this and earlier releases are available on <https://docs.silabs.com/>.

To implement a specific application, Silicon Labs recommends starting with one of the existing pre-certified apps with the desired Role Type.



6.2 Security Information

Secure Vault Integration

This version of the stack does not integrate Secure Vault Key Management.

Security Advisories

To subscribe to Security Advisories, log in to the Silicon Labs customer portal, then select **Account Home**. Click **HOME** to go to the portal home page and then click the **Manage Notifications** tile. Make sure that 'Software/Security Advisory Notices & Product Change Notices (PCNs)' is checked, and that you are subscribed at minimum for your platform and protocol. Click **Save** to save any changes.

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<input type="checkbox"/> Buffers	<input type="checkbox"/> ZigBee and Thread
<input type="checkbox"/> Oscillators	<input type="checkbox"/> Z-Wave
<input type="checkbox"/> CDR and PHY	

6.3 Support

Development Kit customers are eligible for training and technical support.

See support resources and contact Silicon Laboratories support at <http://www.silabs.com/support>.

7 Product Life Cycle and Certification

Silicon Labs will add new features based on market requirements and continuously improve the Z-Wave Protocol to position the Z-Wave Ecosystem. The Z-Wave Protocol Life Cycle is a process to provide rapid innovation, new features, and robust matured protocol release to Z-Wave Partners. The Z-Wave Protocol Life Cycle defines the maturation process of Z-Wave Protocol generations and consist of three phases divided in five Life Cycle stages.

Ascent Phase (BETA)

Silicon Labs releases new Z-Wave protocol generations (branches), i.e., initial BETA release of a Z-Wave Protocol generation that will introduce major new features/functions or support for a new Z-Wave Single Chip generation. This release is not certified and not eligible for certification.

Maturity Phase (ACTIVE/MAINTAINED)

Each new generation will generate follow-on matured releases to resolve protocol issues prioritized by Silicon Labs and based on input from Z-Wave Alliance Partners.

Decline Phase (MONITORED/OBSOLETE)

After a period of 17-24 months in the maturity phase a branch/release is discontinued and for an additional period (up to 24 months) a discontinued branch/release will be monitored since products based on this branch may still be shipping or under warranty in the field.

Table 7-1. Z-Wave SDK Life Cycle Status

Series	Branch	SDK Version	Release Date [DD-MMM-YYYY]	Life Cycle Status
700	7.1x.x	7.16.3 GA	13-OCT-2021	Active
		7.16.2 GA	08-SEP-2021	Maintained
		7.16.1 GA	21-JUL-2021	Maintained
		7.16.0 Pre-Certified GA	16-JUN-2021	Obsolete
		7.15.4 GA	07-APR-2021	Active
		7.15.2 Pre-Certified GA	27-JAN-2021	Maintained
		7.15.1 Pre-Certified GA	09-DEC-2020	Monitored
		7.14.3 GA	14-OCT-2020	Maintained
		7.14.2 GA	09-SEP-2020	Monitored
		7.14.1 GA	29-JUL-2020	Monitored
		7.14.0 Beta	24-JUN-2020	Obsolete
		7.13.10 GA	18-AUG-2021	Active
		7.13.9 GA	03-MAR-2021	Maintained
		7.13.8 GA	28-NOV-2020	Monitored
		7.13.7 GA	12-AUG-2020	Monitored
		7.13.6 GA	27-MAY-2020	Obsolete
		7.13.5 GA	29-APR-2020	Obsolete
		7.13.4 GA	15-APR-2020	Obsolete
		7.13.3 GA	20-MAR-2020	Obsolete
		7.13.2 GA	21-FEB-2020	Obsolete
		7.13.1 GA	24-JAN-2020	Obsolete
		7.13.0 Beta	13-DEC-2019	Obsolete
		7.12.2 GA	26-NOV-2019	Obsolete
		7.12.1 GA	20-SEP-2019	Obsolete
7.11.1 GA	12-JUL-2019	Obsolete		
7.11.0 GA	29-MAR-2019	Obsolete		

A change in the Z-Wave SDK utilized for a specific device does require recertification; however, the type of certification required, the amount of testing needed, and the associated fees depend on the scope of the change.

Table 7-2. Z-Wave Certification in case of a SDK upgrade.

SDK Version	Upgrade to SDK Version	Type of Certification
7.16.3 GA	NA	-
7.16.2 GA	7.16.3 GA	Re-certification
7.16.1 GA	7.16.2 GA	Re-certification
7.16.0 Pre-Certified GA	7.16.1 GA	Full certification
7.15.4 GA	7.16.1 GA	Full certification
7.15.2 Pre-Certified GA	7.15.4 GA	Full certification
7.15.1 Pre-Certified GA	7.15.2 Pre-Certified GA	Full certification
7.14.3 GA	7.15.1 Pre-Certified GA	Full certification
7.14.2 GA	7.14.3 GA	Re-certification
7.14.1 GA	7.14.2 GA	Re-certification
7.14.0 Beta	7.14.1 GA	Full certification
7.13.10 GA	7.14.1 GA	Re-certification
7.13.9 GA	7.13.10 GA	Re-certification
7.13.8 GA	7.13.9 GA	Re-certification
7.13.7 GA	7.13.8 GA	Re-certification
7.13.6 GA	7.13.7 GA	Re-certification
7.13.5 GA	7.13.6 GA	Re-certification
7.13.4 GA	7.13.5 GA	Re-certification
7.13.3 GA	7.13.4 GA	Re-certification
7.13.2 GA	7.13.3 GA	Re-certification
7.13.1 GA	7.13.2 GA	Re-certification
7.13.0 Beta	7.13.1 GA	Full certification
7.12.2 GA	7.13.1 GA	Re-certification
7.12.1 GA	7.13.1+ GA	Re-certification
7.11.1 GA	7.14.1+ GA 7.13.1+ GA	Re-certification Re-certification
7.11.0 GA	7.14.1+ GA 7.13.1+ GA	Re-certification Re-certification

Notice that 7.16.3 GA is certified for Z-Wave and Z-Wave Long Range based on the approved 2021A Specification test suites.

8 Legal

8.1 Disclaimer

Silicon Labs intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Labs products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and “Typical” parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Labs reserves the right to make changes without further notice to the product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Without prior notification, Silicon Labs may update product firmware during the manufacturing process for security or reliability reasons. Such changes will not alter the specifications or the performance of the product. Silicon Labs shall have no liability for the consequences of use of the information supplied in this document. This document does not imply or expressly grant any license to design or fabricate any integrated circuits. The products are not designed or authorized to be used within any FDA Class III devices, applications for which FDA premarket approval is required or Life Support Systems without the specific written consent of Silicon Labs. A “Life Support System” is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Labs products are not designed or authorized for military applications. Silicon Labs products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons. Silicon Labs disclaims all express and implied warranties and shall not be responsible or liable for any injuries or damages related to use of a Silicon Labs product in such unauthorized applications. **Note: This content may contain offensive terminology that is now obsolete. Silicon Labs is replacing these terms with inclusive language wherever possible. For more information, visit www.silabs.com/about-us/inclusive-lexicon-project**

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