



ID Lock



Z-Wave Module

Technical manual
for FW 1.6

ENGLISH

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1. Introduction

The ID Lock Z-wave Module is a security enabled Z-wave Plus product which is able to use encrypted Z-wave Plus messages in order to communicate to other Z-wave Plus products with enabled security.

The module is created for the ID Lock 150 and is also backwards compatible with the ID Lock 101 (note that some functionality is not available on ID Lock 101).

The ID Lock Z-wave Module must be used in conjunction with a Security Enabled Z-wave Controller in order to fully utilize its full capability. Other nodes in the Z-wave network can function as repeaters.

The ID Lock Z-wave Module can be included and operated in any Z-wave network containing other certified Z-wave products regardless of manufacturer.

Using the Z-wave Module on the ID Lock will affect the battery life of the door lock.

The ID Lock Z-wave Module does not support the Basic Set Command Class.

2. Overview

Z-wave Module is a Z-wave interface device of ID Lock and is used to connect a to Z-wave Controller using the Z-wave protocol.

This document describes the specifics for Z-wave command classes used when ID Lock Z-wave Module is interfacing with a Z-wave controller.



Front Side of Z-wave Module



Back Side of Z-wave Module

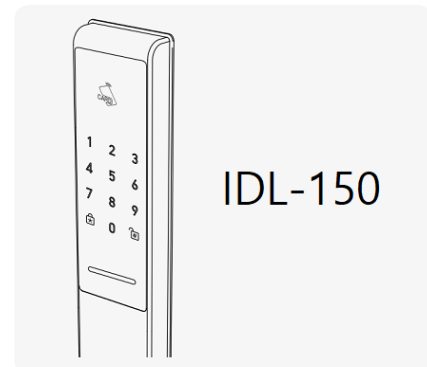
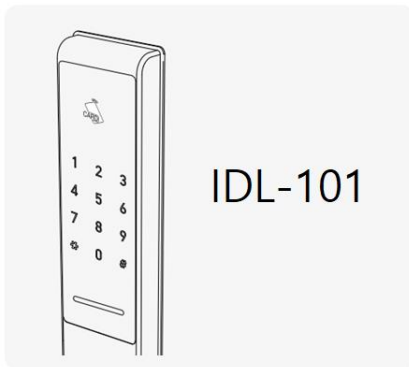


Sales box and Z-wave module

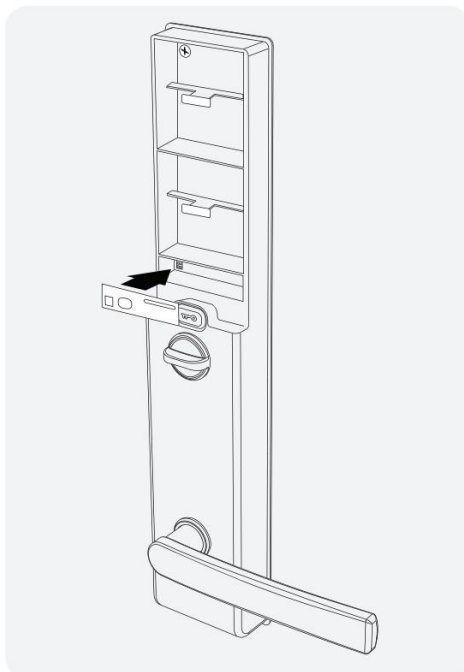
3. Getting started

Identify your model type (101 or 150)

The keypads on 101 and 150 are different. Whilst the 101 has a * (star) and # (hash) left and right of digit "0" the 150 has open and closed padlocks (see pictures below).



Note: FW v1.6 of ID Lock Z-wave Module has reduced compatibility for ID Lock 101.



The Z-wave Module fits only one way below the batteries on both 101 and 150. The slot is marked "Remote control".

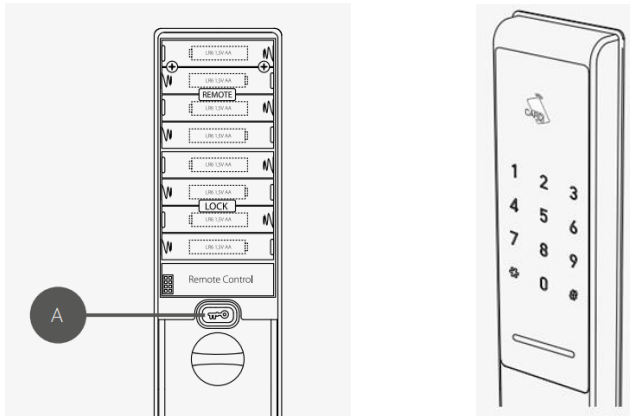
IMPORTANT!

Always remove batteries before inserting or removing the Z-wave Module.

Inclusion and Exclusion (Adding or removing)

ID Lock 101

For inclusion (puts your device in inclusion mode) of ID Lock 101 first set your designated Z-wave controller in inclusion mode then press and hold the Key Button [A] until keypad is activated whilst the door lock is open and unlocked.



Release button [A] and press digit [8] on keypad.

Inclusion mode starts immediately and is indicated by flashing blue LEDs.

Z-wave module device reset

For Z-wave local reset follow same procedure except use digit [0].

Reset starts immediately and is indicated by flashing blue LEDs.

Warning!

After Z-wave local reset the device might have to be excluded before a new inclusion.

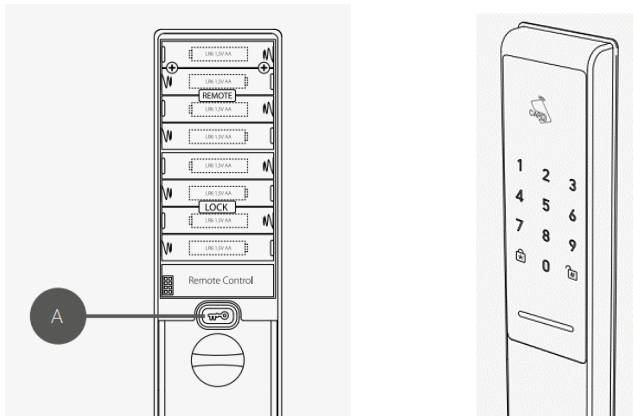
This function is made available by design only to be used if your module does no longer function properly or if your Z-wave controller is lost.

Inclusion and Exclusion (Adding or removing)

ID Lock 150

Inclusion and Exclusion (Adding or removing)

For inclusion (puts your device in inclusion mode) of ID Lock 150 first set your designated Z-wave controller in inclusion mode then press and hold the Key Button [A] until keypad is activated whilst the door lock is open and unlocked.



1. Release button [A] and enter Master PIN [1234], followed by [*] on keypad.
2. Press digit [2], followed by [*] to enter settings menu.
3. Press digit [5] to start inclusion or inclusion.

Inclusion mode starts immediately and is indicated by flashing blue LEDs.

Z-wave module device reset

For Z-wave local reset follow same procedure except use digit [0] instead of [5].

Take notice that if the Z-wave module is included in a Z-wave network the door lock will return to factory settings when performing a local reset.

Reset starts immediately and is indicated by flashing blue LEDs.

Warning!

After Z-wave local reset the device might have to be excluded before a new inclusion.

This function is made available by design only to be used if your module does no longer function properly or if your Z-wave controller is lost.

4. Z-wave firmware version

This chapter contains the release for the Z-wave Module firmware.

ID Lock 150 firmware can and must be updated with the app ID Lock 150 Updater which is available for iOS and Android devices (idlock.no/updater).

Firmware version 1.6

Firmware version 1.6 is compatible with ID Lock 150 firmware 1.4.7 and newer.

- Configuration parameters
 - *Changed how ID lock 150 handles configuration parameter 2 “RFID Registration mode”.*
 - *Added configuration report for Door audio volume (configuration parameter 4) and service pin mode (configuration parameter 7)*
 - *Added values 0x07 “always mode” and 0xFE “disable mode” to configuration parameter 7 service pin mode.*
 - *Changed configuration parameter 8 “updater mode” and 9 “Master pin mode”.*
- Notification parameters
 - *Added several new notification events for “Access Control” (0x06). Notifications for different lock types, add and delete usercodes and lock jammed added.*
 - *Moved remote unlock from “keypad unlock operation” with identifier 0x00, to “RF unlock operation” with identifier 0x00.*
- Version parameter
 - *Changed how a version report describes ID lock 150 firmware version.*
- Credentials of z-wave index
 - *Changed Z-Wave identifiers for master pin, service pin, user pins and RFID.*
- Battery level report
 - *Changed low battery value and graph.*
- Bugfixes on PowerDownNow and Watchdog Timer

5. Z-wave Specifications

- *Device Type: Secure Keypad Door Lock*
- *Role Type: LSS (Listening Sleeping Slave)*

Supported Command Classes

■ *Non Secure Mode*

CLASS	Value (Hex)
COMMAND_CLASS_ZWAVEPLUS_INFO_V2	5E
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2	72
COMMAND_CLASS_SECURITY_V1	98
COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1	5A
COMMAND_CLASS_POWERLEVEL_V1	73
COMMAND_CLASS_CONFIGURATION_V1	70

■ *Secure Mode (S0)*

CLASS	Define Value (Hex)
COMMAND_CLASS_VERSION_V2	86
COMMAND_CLASS_DOOR_LOCK_V2	62
COMMAND_CLASS_USER_CODE_V1	63
COMMAND_CLASS_ASSOCIATION_V2	85
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V1	59
COMMAND_CLASS_NOTIFICATION_V4	71
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2	7A
COMMAND_CLASS_BATTERY_V1	80

6. Configuration Parameters

These configuration parameter numbers and values are specific for the different applications.

COMMAND_CLASS_CONFIGURATION

Name	Parameter Number	Size	Parameter Values	Description
Configuration Set parameter	1	1	0-3	Door Lock Mode
	2	1	5,9	RFID Mode (only IDL-150)
	3	1	0-1	Door Hinge Position Mode
	4	1	0-5	Audio Volume
	5	1	0-1	Door Relock Mode
	6	1	0-9, FE	Service Pin Mode
	7	1	150	Door Lock Model Type (read only, only IDL-150)
	8	1	0-3	Updater Mode (only IDL-150)
	9	1	0-1	Master PIN Mode

Name	Parameter	Size	Value	Description	Remarks
Lock Mode	1	1	0	Manual lock Away off	
			1	Auto lock Away off	Default value
			2	Manual lock Away on	After unlock value 0
			3	Auto lock Away on	After unlock value 1
RFID Mode	2	1	5	RFID activated	Default value
			9	RFID deactivated	
Hinge Direction	3	1	0	Right hinged operation	Default value
			1	Left hinged operation	
Audio Volume	4	1	0-6	0 = OFF 1-6 = Level	Default value: 5
ReLock Mode	5	1	0	ReLock OFF	
			1	ReLock ON	Default value

Name	Parameter	Size	Value	Description	Remarks
Service PIN Mode (Index 108)	6	1	0	Deactivated	Default value
			1	1x use	Returns to value 0
			2	2x uses	Returns to value 0
			3	5x uses	Returns to value 0
			4	10x uses	Returns to value 0
			5	Not used	For future use
			6	Not used	For future use
			7	Always valid	
			8	12 hours	Returns to value 0
			9	24 hours	Returns to value 0
			FE	Disabled	Disables both PIN and Service PIN menu on door lock
			Model Type	7	1
150 (96)	ID Lock 150	Ready only			
Updater Mode	8	1	0	Off (no sound)	Default value
			1	On (no sound)	Enables use of Updater app
			2	Off	
			3	On	Enables use of Updater app
Master PIN Unlock Mode (Index 109)	9	1	0	Off	
			1	On	Default value

7. Notification Parameter

These Notification parameters are specific for the applications. ID Lock supports Notification Class (V4) to report events of ID Lock.

The type and event is described in table below.

COMMAND_CLASS_NOTIFICATION (V4)

Notification Type	Event	Event Parameter	Description
Access Control (0x06)	Manual Lock Operation (0x01)		Manual lock and key button lock
	Manual Unlock Operation (0x02)		Manual unlock and key button unlock
	RF lock Operation (0x03)		Remotely locked (z-wave) ID = 0 or Locked by RFID ID = RFID identifier
	RF Unlock Operation (0x04)	RF unlock (0x00) or RFID Index Info.	Remotely unlocked (z-wave) ID = 0 or Unlocked by RFID ID = RFID index
	Keypad Lock Operation (0x05)		User ID = PIN index
	Keypad Unlock Operation (0x06)	User ID of User Code Report	User ID = PIN index
	Auto lock locked Operation (0x09)		Auto lock and Relock
	Lock jammed (0x0B)		
	All user code deleted (0x0C)		

	Single user code deleted (0x0D)		
	Single user code added (0x0E)		
	New user code not added due to duplicate code (0x0F)		
	Unlock By RF with invalid user code (0x14)	Unknown Credential Information	Unknown PIN Or Unknown RFID
	Lock by RF with invalid user code (0x15)	Unkown Credential information	Unknown PIN Or Unknown RFID
Home Security(0x07)	Tampering, Product covering Removed (0x03)		Door Forced Open (Idle after PIN input)
	Idle (0x00)		
Emergency (0x0A)	Contact Fire Service (0x02)		Fire Sensor (Idle after PIN input)
	Idle (0x00)		

■ Use Case of Manual Lock Notification

- *Example: Lock the door by thumb turn switch or open/close button*

Notification Type	Notification Event	Para Length
0x06	0x01	0

■ Use Case of Manual Unlock Notification

- *Example: Unlock the door by thumb turn switch or open/close button*

Notification Type	Notification Event	Para Length
0x06	0x02	0

■ Use Case of RF Lock Operation

- *Example : lock the door by remote unlock (Z-wave)*

The value of para1 refers to a reserved value

Notification Type	Notification Event	Para Length	Para1
0x06	0x03	0x01	0x00

Use Case of RF Unlock Operation

- *Example : Unlock the door by remote unlock (Z-wave) or RFID Card*

The value of para1 refers to user identifier for RFID or remote unlock (0x00)

Notification Type	Notification Event	Para Length	Para1
0x06	0x04	0x01	0x00

Use Case of Keypad Lock Operation

- *Example: Lock the door by Keypad by thouching panel*

The value of para1 refers to a reseved value

Notification Type	Notification Event	Para Length	Para1
0x06	0x05	0x01	0x00

Use case of Keypad Unlock Operation

- *Example: Unlock the door by Keypad using PIN Code.*

The value of para1 refers to User Identifier of User PIN

Notification Type	Notification Event	Para Length	Para1
0x06	0x06	0x01	0x00

Use case of Auto lock locked operation

- *Example: Locked automaticly by auto lock or relock*

Notification Type	Notification Event	Para Length	Para1
0x06	0x09	0	0x00

■ Use case of Lock Jammed

- *Example: unsuccessful lock or unlock*

Notification Type	Notification Event	Para Length
0x06	0x0B	0

■ Use case of All User Code Deleted

- *Example: Delete all user pins either through z-wave or locally on lock*

Notification Type	Notification Event	Para Length
0x06	0x0C	0

■ Use case of Single User Code Deleted

- *Example: Delete single user pin either through z-wave or locally on lock*

Notification Type	Notification Event	Para Length
0x06	0x0D	0

■ Use case of New User Code Added

- *Example: Add single user pin either through z-wave or locally on lock*

Notification Type	Notification Event	Para Length
0x06	0x0E	0

Use case of User Code Not Added Due to Duplicate Code

- *Example: pin not added due to duplicate pin code*

Notification Type	Notification Event	Para Length
0x06	0x0F	0

Use case of Unlock by RF with invalid user code

- *Example: Invalid PIN code Notification Report*

PIN Type is 1 value and Invalid PIN code is 12121212

Notification Type	Notification Event	Para Length	Para1	Para2	Para3	Para4
0x06	0x14	0x04	0x12	0x12	0x12	0x12

- *Example: Invalid RFID Notification Report*

RFID Type is 2 value and Invalid RFID UID is 0x89AE939C

Notification Type	Notification Event	Para Length	Para1	Para2	Para3	Para4	Para5
0x06	0x14	0x05	0x02	0x89	0xAE	0x93	0x9C

Use case of lock by RF with invalid user code

Reserved, not implemented on door lock firmware version 1.4.7 (for future use)

- *Example: Invalid PIN code Notification Report*

PIN Type is 1 value and Invalid PIN code is 12121212

Notification Type	Notification Event	Para Length	Para1	Para2	Para3	Para4
0x06	0x14	0x04	0x12	0x12	0x12	0x12

- *Example: Invalid RFID Notification Report*

RFID Type is 2 value and Invalid RFID UID is 0x89AE939C

Notification Type	Notification Event	Para Length	Para1	Para2	Para3	Para4	Para5
0x06	0x14	0x05	0x02	0x89	0xAE	0x93	0x9C

Use case of Tampering (Door Forced Open)

- *Example: The door is forced opened by burglar (Alarm).
To deactivate: Enter valid PIN followed by #.*

Notification Type	Notification Event	Para Length
0x07	0x03	0x00

Use case of Emergency (Fire Sensor)

- *Example: Extreme heat is detected by heat sensor on door lock inside.
To deactivate: Enter valid PIN followed by #.*

Notification Type	Notification Event	Para Length
0x0A	0x02	0x00

8. Manufacturer Parameter

The ID Lock support the Manufacturer Specific Command Class with the following parameters.

COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2

Name	Value	Description
Manufacture ID	0x0373	ID Lock AS
Product Type ID	0x03	PRODUCT_TYPE_ID_ZWAVE_PLUS
Product ID	0x01	PRODUCT_ID_DoorLockKeyPad

9. Version Parameter

ID Lock supports Door Lock Command Class Version 2 with the following parameters

“Firmware 1”, “version and sub version” describes the version of ID Lock 150. I.e. 0x01 0x47 equals IDL-150 fw v1.4.7.

COMMAND_CLASS_VERSION_V2

Name	Value	Remark
Z-wave Protocol Library Type	0x03	
Z-wave Protocol Version	0x04	
Z-wave Protocol Sub version	0x05	
Firmware 0 Version	0x01	
Firmware 0 Sub Version	0x06	
Hardware Version	0x01	
Number of Firmware targets	0x01	
Firmware 1 Version	0x01	
Firmware 1 Sub version	0x47	

10. User Codes (PINs and RFIDs)

■ User code ID status

In order to set or reset user codes of ID Lock 150, it is used COMMAND_CLASS_USER_CODE_V1.

The User ID Status is defined as below for ID Lock 150

Parameter	Value	Description
User ID Status	0x00	Available (Not set) When user code is deleted
	0x01	Occupied When user code is registered
	0xFE	Status not available When user code is all deleted

Credentials

ID Lock 150 Z-wave module is compatible with `COMMAND_CLASS_USER_CODE_V1`. In order to set or reset credentials of ID Lock 150 use commands with identifier number, status and value. Delete all credentials resets Master PIN to [1234].

Credentials table for ID Lock 150:

ID Lock Model	Max number	Description
ID Lock 150	109	User PIN (25) RFID (25) Reserved (57) Service PIN (1) Master PIN (1)

User code table for ID Lock 150:

Z-wave identifier	ID Lock index	Description
1-25	1-25	User PINs Master PIN
26-51	1-25	RFIDs (see also configuration parameter 2)
52-107	-	Reserved for later use
108	1	Service PIN (see also configuration parameter 6)
109	1	Master PIN (cannot be deleted, see also configuration parameter 9)

11. Door Lock Operation Report Value

The Door Lock Operation Report contents is as follows.

COMMAND_CLASS_DOOR_LOCK_V2

Parameter	Value	Description
Door Lock Mode	0x00	Door Unsecured
	0xFF	Door Secured
Door Condition	0x00	Locked/Opened
	0x01	Locked/Closed
	0x02	Unlocked/Opened
	0x03	Unlocked/Closed

12. Battery Level Report

The battery level report, when a user request the current battery level on the ID Lock, Z-wave responds this level by Battery Level Report command.

And when low battery occurs, it reports this by the same command.

Parameter	Value	Description
Battery Level	0x00 – 0x64	Battery Level (0 ~ 100 %)
	0xFF	Indicates low battery warning

If battery level is below a given value, low battery warning is reported (0xFF).

If Z-wave Module is requested the battery level it repost 0x00~0x64 with the battery level command class. The actual battery level is updated and sent after each unlock operation.

Note: There is a short delay on the report sent after unlock operation.

13. Association & Association Group Parameter

The ID Lock support 1 association group with 5 devices.

Notification Reports are sent out unsolicited to device included in the association group.

Regarding Notification Information, refer to chapter “4.3 Notification Parameter”.

- Grouping identifier : 1*
- Name : Lifeline*

14. Glossary

Terminology	Description
Inclusion	Add a Z-wave device to the network
Exclusion	Delete a Z-wave device from the network
Unsecure/Unsecured	Unlock/Unlocked (door)
Secure/Secured	Lock/Locked (door)
Association	Association is used to organize nodes in different groups allowing the device to identify the nodes by a group identifier. The groups can also be copied to other devices