Z-wave module 01A
for ID Lock 101 & 150

Z-Wave user manual

ID Lock AS
idlock.no

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1 Introduction

The ID Lock Z-wave module is a security enabled Z-wave Plus product that is able to use encrypted Z-wave Plus messsages in order to communicate to other Z-wave Pluse products enabled security.

The module is proprietory for the ID Lock 150 and also backwards compatible with the ID Lock 101.

The ID Lock Z-wave module must be used in conjunctioin with a Security Enabled Z-wave Controller in order to fully utilize their full capability.

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

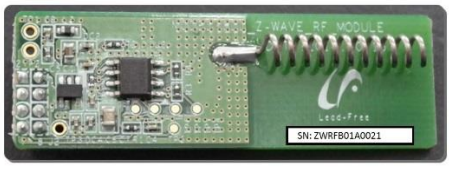
The ID Lock Z-wave module does not support the Basic Set Command Class.

2 Overview

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

This document is decribed the Z-wave command class used for ID Lock Z-wave RF Module interfacing with a Z-wave controller.

- Z-wave RF Module



Front Side of Z-wave module

Back Side of Z-wave module

3 Getting started

3.1 How to see if your ID Lock is a 101 or 150

If your ID Lock is from the 101-series it has two hidden buttons beneath the battery cover marked “P” and “C/F”, these buttons are positioned to the right and left of the button with a key on it  .

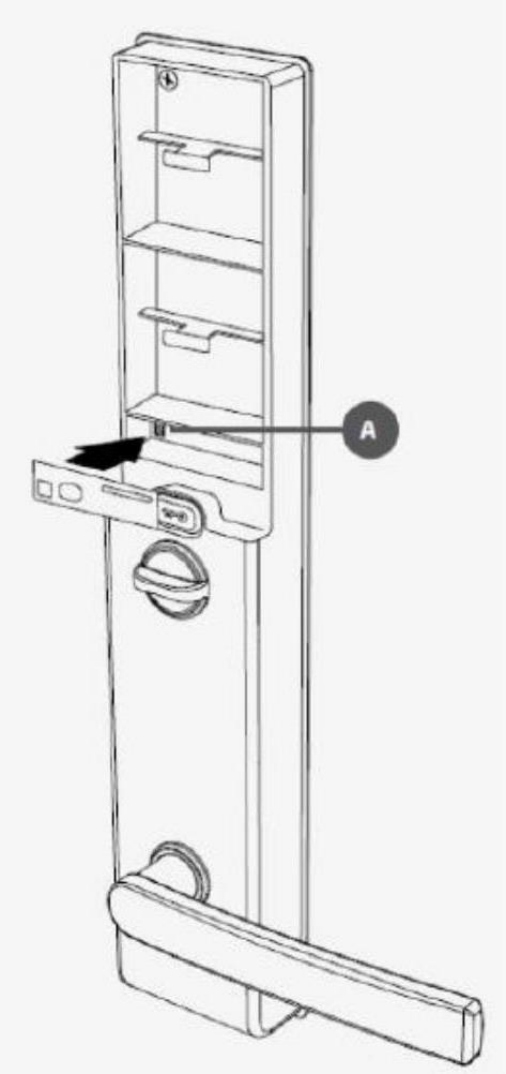
The keypad is numerical and has a * (star) and # (hash) symbol to the left and right of the digit 0.

If your ID Lock is from the 150-series it has only one button on the inside unit, the button with a key on it  .

The keypad is like the 101-series numerical but the * and # symbols have been replaced with an open and locked padlock around the * and # symbols: 

3.2 ID Lock 101

For ID Lock 101 the following procedures are used to include or exclude the device to a Z-wave network. Local reset procedure must be used with caution.



A: Z-wave interface module

IMPORTANT: Batteries must be removed prior to removing or inserting the interface module.

Inclusion – (Puts your device in inclusion mode)

• Push and hold button until all LEDs on keypad activates. (with ID Lock in an unlocked state)

• Release button and press “8” on keypad.

Inclusion mode starts immediately. LED indicator below logo signals this by flashing blue.

Exclusion – (Puts your device in exclusion mode)

• Push and hold button until all LEDs on keypad activates. (with ID Lock in an unlocked state)

• Release button and press “8” on keypad.

Exclusion mode starts immediately. LED indicator below logo signals this by flashing blue.

Device reset – (This will reset Z-wave module to factory default settings)

Warning: Please do only proceed with the following reset procedure, if primary network controller is missing or otherwise inoperable.

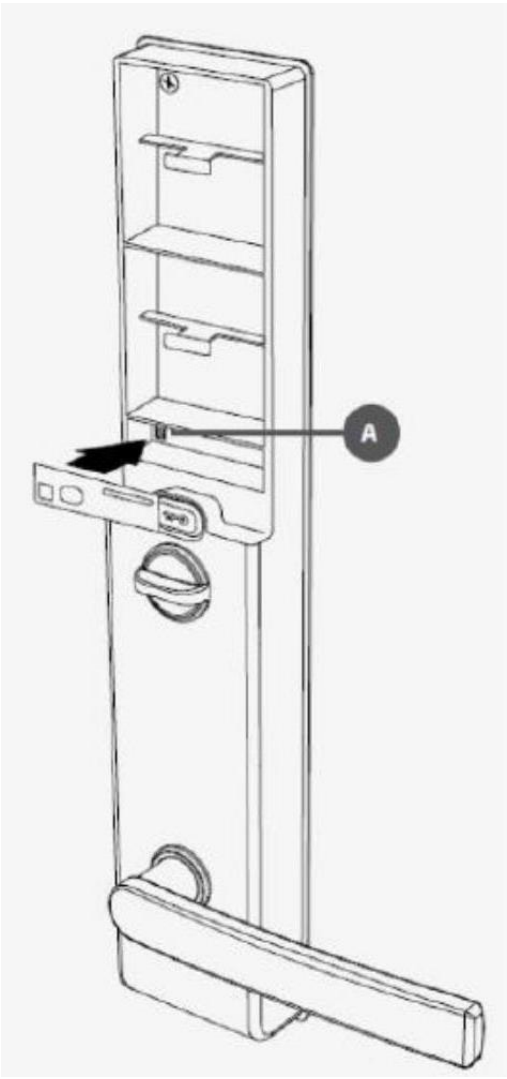
• Push and hold button until all LEDs on keypad activates. (with ID Lock in an unlocked state)

• Release button and press “0” on keypad.

Reset procedure starts immediately. LED indicator below logo signals this by flashing blue.

3.3 ID Lock 150

For ID Lock 150 the following procedures are used to include or exclude the device to a Z-wave network. Local reset procedure must be used with caution.



A: Z-wave interface module

IMPORTANT: Batteries must be removed prior to removing or inserting the interface module.

Inclusion – (Puts your device in inclusion mode)

• Push and hold button until all LEDs on keypad activates. (with ID Lock in an unlocked state)

• Release button and type Master PIN (Factory setting: "1234") on keypad followed by .

• Press digit "2" on keypad followed by (you have now entered the "Settings menu").

• Press digit "5" on keypad.

Inclusion mode starts immediately. LED indicator below logo signals this by flashing blue.

Exclusion – (Puts your device in exclusion mode)

Same procedure as inclusion.

Exclusion mode starts immediately. LED indicator below logo signals this by flashing blue.

Device reset – (This will reset Z-wave module to factory default settings)

Warning: Please do only proceed with the following reset procedure, if primary network controller is missing or otherwise inoperable.

• Push and hold button until all LEDs on keypad activates. (with ID Lock in an unlocked state)

• Release button and type Master PIN (Factory setting: "1234") on keypad followed by .

• Press digit "2" on keypad followed by (you have now entered the "Settings menu").

• Press digit "0".

Reset procedure starts immediately. LED indicator below logo signals this by flashing blue.

4 Z-wave Specifications

○ Device Type: Secure Keypad Door Lock

○ Role Type: LSS (Listening Sleeping Slave)

4.1 Supported Command Classes

■ Non Secure Mode

CLASS	Define 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

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

4.2 Configuration Parameters

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

COMMAND_CLASS_CONFIGURATION

Name	Parameter Number	Size	Description
Configuration Set parameter	1	1	Door Lock Mode
	2	1	RFID Registration Mode (Only available on ID Lock 101)
	3	1	Door Hinge Position Mode
	4	1	Audio volume
	5	1	Door ReLock Mode
	6	1	Service PIN Mode
	7	1	Door Lock Model Type
	8	1	Reserved (For future use)
	9	1	Reserved (For future use)

4.2.1 Door Lock Mode

Auto lock Mode, Manual lock mode, Activate Away Mode, Deactivate Away Mode.

If value is 0x02 (Enable Away, Manual lock) and the door is unlocked value will be set to 0x00.

If value is 0x03 (Enable Away, Auto lock) and the door is unlocked value will be set to 0x01.

- Default Value: 1 (Disable Away/Auto Lock Mode)

Name	Parameter Number	Size	Value	Description
Door Lock Mode	1	1	0	Disable Away Manual Lock
	1	1	1	Disable Away Auto Lock
	1	1	2	Enable Away Manual Lock
	1	1	3	Enable Away Auto Lock

4.2.2 RFID Registration Configuration

IDLocks can use up to 50 RFID cards. In order to use a RFID, RFID has to be registered by Z-wave configuration command class.

RFID Configuration with Z-wave is only valid for ID Lock 101.

Configuration Parameters are as below. Default value is 0x05 (Not in progress). ID Lock 150 will always report 0x05 as this feature is not supported by this door lock model.

- Configuration Set in case of starting to register from gateway.

Name	Parameter Number	Size	Value	Description
RFID Register	2	1	0x01	Begin RFID Registering mode on the door lock
	2	1	0x07	RFID Database clear
	2	1	0x08	RFID Registering mode stop

- Configuration Report regarding Configuration Set

According to the process of registration RFID, these configuration reports are transmitted to the gateway.

These reports are only valid on an ID Lock 101. ID Lock 150 will always report 0x05 (Not in progress) as this is not a feature valid on this door lock model.

Name	Parameter Number	Size	Value1	Value2	Description
RFID Register Mode	2	1	0x02	-	Fail Registration new RFID was fail
	2	2	0x03	RFID Index Number	Success Registration new RFID was Successful RFID Index: 10 ~ 59 (ID-101)
	2	1	0x04	-	Finished Registration mode finished and End
	2	1	0x05	-	Not In Progress RFID Registration mode not in progress
	2	1	0x06	-	In Progress RFID Registration mode in progress

4.2.3 Door Hinge Position Mode

- Default Value: 0 (Right Handle)

Name	Parameter Number	Size	Value	Description
Door Hinge Position	3	1	0	Right Handle
	3	1	1	Left Handle

4.2.4 Door Audio Volume Level

This parameter is a set only parameter. If the value is changed locally on the door lock, this value will not change.

- Default Value: 5

Name	Parameter Number	Size	Value	Description
Audio Volume Level	4	1	0	No Sound
	4	1	1	Level 1
	4	1	2	Level 2
	4	1	3	Level 3
	4	1	4	Level 4
	4	1	5	Level 5
	4	1	6	Max. Sound Level

4.2.5 Retrieve RFID Information

- Configuration Get for retriving the RFID information

Parameter Number means RFID index.

This command is only valid for ID Lock 101.

Name	Parameter Number	Description
Get RFID Information	ID-101: 10 ~ 59	RFID Information registered Parameter Number means RFID index. 10 = RFID index 1 .... 59 = RFID index 50

- Configuration Report for retriving the RFID information

In example: RFID index is 1 and information is 0xFDBEC2DE

Name	Parameter Number	Size	Para1	Para2	Para3	Para4
Get RFID Information	10	4	0xFD	0xBE	0xC2	0xD2

4.2.6 Door ReLock Mode

- Default Value: 1 (Enabled)

Name	Parameter Number	Size	Value	Description
ReLock mode	5	1	0	Disabled
	5	1	1	Enabled

4.2.7 Service PIN Mode

- Default Value: 0 (Deactivated)

A configuration get command on this parameter returns the latest set parameter value (set by Z-wave).

This is a set only value, if changed locally on keypad these values are not changed on Z-wave module. Value 5, 6 and 7 are for future use on door lock.

Name	Parameter Number	Size	Value	Description
Service PIN Mode	6	1	0	Deactivated
	6	1	1	1 times used
	6	1	2	2 times used
	6	1	3	5 times used
	6	1	4	10 times used
	6	1	5	Not used (for future use)
	6	1	6	Not used (for future use)
	6	1	7	Not used (for future use)
	6	1	8	12 Hours used
	6	1	9	24 Hours used

4.2.8 Door Lock Model Type

- This configuration is only accepted by configuration get command

It is a read only parameter. Default value depends on the door lock model type.

Name	Parameter Number	Size	Value	Description
Door Lock Model Type	7	1	101(65) or 150(96)	101 = ID Lock 101 150 = ID Lock 150

4.3 Notification Parameter

These Notification parameters (types an levels) are specific for the applications.

The ID Lock supports the Notification Class (V4) to report events of ID Lock.

The type and event are specific for ID Lock and defined as described below.

COMMAND_CLASS_NOTIFICATION (V4)

Notification Type	Event	Event Parameter	Description
Access Control (0x06)	Manual Lock Operation (0x01)		
	Manual Unlock Operation (0x02)		
	RF Unlock Operation (0x04)	RFID Index Info.	Unlock by RFID
	Keypad Unlock Operation (0x06)	User ID of User Code Report	User ID = 1 (Master PIN) User ID =2 (Service PIN) User ID =0 (Remote Unlock)
	Unlock By RF with invalid user code (0x14)	Unknown Credential Information	Unknown PIN Code Or Unknown RFID
Home Security(0x07)	Tampering, Product covering Removed (0x03)		Door Forced Open
Emergency (0x0A)	Contact Fire Service (0x2)		Fire Sensor

4.3.1 Use Case of Manual Lock Notification

- Example: Lock the door by Manual or RFID / Keypad

Notification Type	Notification Event	Para Length
0x06	0x01	0

4.3.2 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

4.3.3 Use case of RF Unlock Operation

- Example : Unlock the door by RFID Card (RFID 1 ~ 9 = 0x0A ~ 0x12)

Notification Type	Notification Event	Para Length	Para1
0x06	0x04	0x01	0x0A

4.3.4 Use case of Keypad Unlock Operation

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

The value of para1 refers to User ID of Master PIN (User ID = 1)

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

The value of para1 means User ID of Service PIN (User ID = 2)

Notification Type	Notification Event	Para Length	Para1
0x06	0x06	0x01	0x02

If the door is unlocked by remote side from Z-wave module, in order to know the status, the value of para1 0x00 means remote unlock.

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

The value of para1 refers to User ID of User PIN (User PIN 1 ~ 10 = 0x3C ~ 0x45)

Notification Type	Notification Event	Para Length	Para1
0x06	0x06	0x01	0x3C

4.3.5 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 1212

Notification Type	Notification Event	Para Length	Para1	Para2	Para3	Para4
0x06	0x14	0x04	0x01	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

4.3.6 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

4.3.7 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

4.4 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

4.5 Version Parameter

The ID Lock support the Door Lock Command Class Version 2 with the following parameters.

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	0x05	
Hardware Version	0x01	
Number of Firmware targets	0x01	
Firmware 1 Version	0x01	*If ID Lock 101 value is 0x00*
Firmware 1 Sub version	0x01	*If ID Lock 101 value is 0x00*

4.6 Credentials of Z-wave Index

In oder to set or reset credentials of ID Lock 150, it should be used by COMMAND_CLASS_USER_CODE_V1 with identifier number.

▶ In order to have backwards compatibility to ID Lock 101, credentials are indexed as explained below.

▶ User codes of Z-wave specification have 4 -10 digit in length.

In order to register a RFID on ID Lock 150, this is a manual operation. This model does not have the remote registration of RFID possibility.

The table below shows the max User ID on the different ID Lock models.

ID Lock Model	Max number	Description
ID Lock 101	52	Master PIN (1) Service PIN (1) RFID (50)
ID Lock 150	109	Master PIN (1) Service PIN (1) Reserved (7) RFID (50) User PIN (50)

The table below shows the ID Lock 101 User code index.

Z-wave identifier	ID Lock index	Description
1	1	Master PIN
2	1	Service PIN
3~52	1~49	RFID

The table below shows the ID Lock 150 User code index.

Z-wave identifier	ID Lock index	Description
1	1	Master PIN
2	1	Service PIN
3~9	1~7	Reserved (TBD)
10~59	1~9	RFID (ID Lock 150 v1)
	10~59	Not available For the later use (TBD)
60~109	1~10	User PIN (ID Lock 150 v1)
	11~59	Set is possible, not able to use, these are for future use on ID Lock 150 (TBD).

4.7 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

4.8 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

4.9 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 a battery level is below 5.0V, meaning 25 % of total capacity, 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.

4.10 Association & Association Group Parameter

The ID Lock support 1 association group with 5 devices.

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

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

○ Grouping identifier : 1

○ Name : Lifeline

5 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