ASSA ABLOY

The global leader in door opening solutions

Yale Locks

Z-Wave Plus ™ v2 System Integrators Guide

Yale Assure Electronic Deadbolts

YRD216-ZW3, YRD226-ZW3, YRD256-ZW3,
YRC216-ZW3, YRC226-ZW3, YRC256-ZW3,
YRD652-ZW3, NF-YRD622-ZW3, NF-YRD612-ZW3,
YRC652-ZW3, NF-YRC622-ZW3, NF-YRC612-ZW3,
YRD622-ZW3, YRD642-ZW3, YRC622-ZW3, YRC642-ZW3,
YRD410-ZW3, YRD420-ZW3, YRD430-ZW3, YRD450-ZW3

Document Revision: 2.0

March 2023

Contents

* This command class requires security.

Revision History

Rev.	Details
1.0	Initial Release
1.1	Made the following updates: • Added Command Class Clock section. • Added Clock Report to the Association Group Info commands list. • Marked Time as a secure command class. • Added the following note to Time, Time Parameters, and Clock command classes: "If the controller does not support either the Time CC, Time Parameters CC, or Clock CC, then scheduled users will not have access." • Added a brief description of the time syncing mechanism to the Command Class Time section. • Changed Master Code slot from 0xFB to 0x00 in Notifications Table.
1.2	Made the following updates: • Marked the Version command class as secure. • Added Basic command class. • Added information about non-access user codes to the User Code command class section.
1.3	Updated the Product ID description in the "Command Class Manufacturer Specific" section.
1.4	Made the following updates: • Added interconnected locks: YRC216, YRC226, YRC256 • Added configuration parameter 28 (expiration time) to the Configurable Parameters table.
1.5	Made the following updates: • Provided Version Report example • Add mapping of Basic CC to Door Lock CC • Updated CC descriptions that required security • Updating Configuration Parameter Table • Fixed the Max Nodes for Association • Add information on how our Lock uses the Indicator feature • Add information how to trigger unsolicited AGI Lifeline reports • Add description of OTA internal step • Updated User Code User ID Status Values from CC v1 vs v2 • Removed support for Clock CC
1.6	• Added NF-YRD612, NF-YRD622, NF-YRC612, NF-YRC622 and YRC652 • Added SmartStart feature statement
1.7	• Added YRD622, YRD642, YRC622 and YRC642 • Expectations from User Code Set/Get vs Extended User Code Set/Get Commands
1.8	• Added YRD410/420/430/450
1.9	• Added BLE Alarms from BLE locks
2.0	• Added description of what other features are affected when Passage Mode and Escape Return Mode features are enabled.

	• Re-added Scheduling Alarms • Fixed Door State Alarm value

Yale Z-Wave Plus ™ Product Info

Manufacturer ID: ASSA ABLOY (0x0129)

Z-Wave™ Device Type: Door Lock Keypad

Z-Wave™ Role Type: Listening Sleeping Slave (LSS)

Network Operations

Enroll/Add device to network (SmartStart)

SmartStart enabled products can be added into a Z-Wave™ network by scanning the Z-Wave™ QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity.

- Open the Z-Wave™ system's smart home app via smartphone or tablet and follow the in-app prompts to add a new device.
- SmartStart works when the Z-Wave™ system has the DSK saved and one of the following are true:
  - The lock has the minimum Lock firmware version AND is in a factory-reset state:
    - YRC/D216/226/256: v4.4.00
    - YRC/D652: v2.1.07
    - NF-YRC/D622: v2.1.11
    - NF-YRC/D612: v2.2.4
    - YRC/D622/642: v3.2.44
    - YRD410/420/430/450: v1.2.204
  - An internal key has already been established.

Enroll/Add device to network (Classic Inclusion Mode) for Assure Lock [YRC/D216/226/256/622/642/652, NF-YRC/D612/622]

- Enter the 4–8-digit Master PIN code followed by the ⚙ key.
- Press the 7 key followed by the ⚙ key.
- Press the 1 key followed by the ⚙ key.
- Scan the QR code, if prompted, or…
- Enter the first five (5) digits of the DSK if prompted.

Enroll/Add device to network (Classic Inclusion Mode) for Assure 2 Lock [YRD410/420/430/450]

Un-enroll/Remove device from network (Exclusion Mode)

- Enter the 4–8-digit Master PIN code followed by the ⚙ key.
- Press the 7 key followed by the ⚙ key.
- Press the 3 key followed by the ⚙ key.

When the Yale lock is unenrolled/excluded from the network through the device menu mode, any changes previously made to the user code database and configuration settings will be retained, as opposed to set back to defaults.

Factory Reset

- Factory resetting the lock with the Z-Wave™ module installed will clear the Z-Wave™ network settings, causing the device to be removed from the network.
- The following is the method of performing a factory reset:
    1. Manual factory reset, via power cycle while holding button on inside lock escutcheon
        - See the Lock Installation Manual for details.
        - Please use the manual factory reset procedure only when the network primary controller is missing or otherwise inoperable.

Supported Command Classes

The Yale Assure Z-Wave Plus ™ deadbolts follow the Z-Wave™ Command Class Specifications for all command classes that are implemented. Please refer to these specifications for specifics on how each command class works. The supported command classes are listed below, and certain sections contain details about operations that may be specific to the Yale lock. If a section is blank, then please refer to the Z-Wave™ specifications.

As a secure device, most of the command classes supported by the lock are required to be sent securely with Z-Wave™ security. During enrollment, the controller can use the Security Command Class to get this list directly from the lock. If a command class requires security, it is also indicated as such below.

Specification used: Z-Wave™ Specifications Release Dec 2021 BCD

Command Class Z-Wave Plus ™ Info, Version 2

The Z-Wave Plus ™Info command class reports the following information:

- Role Type: Slave Sleeping Listening (0x07)
- Node Type: Z-Wave Plus ™ Node (0x00)
- Installer Icon Type: 0x0300
- User Icon Type: 0x0300

Command Class Manufacturer Specific, Version 2*

* This command class requires security.

The Manufacturer Specific command class reports the following information:

- Manufacturer ID: 0x0129
  - This is the manufacturer ID assigned to ASSA ABLOY.
- Product ID:
  - The Product ID can be used to differentiate between hardware platforms, as well as between ZW2 and ZW3. See Table 1 - First 2 Digits of Product ID, below, for details.
  - Product IDs for the locks covered in this document are as follows:
    - 0x4600 for older version of Yale Residential Deadbolt Lock
    - 0x46D1 for YRD216-ZW3 (Keyed Push Button Deadbolt)
    - 0x46D2 for YRD226-ZW3 (Keyed Touch Screen Deadbolt)
    - 0x46D5 for YRD256-ZW3 (Keyless Touch Screen Deadbolt)
    - 0x46C1 for YRC216-ZW3 (Interconnected Push Button Deadbolt)

- 0x46C2 for YRC226-ZW3 (Interconnected Keyed Touch Screen Deadbolt)
- 0x46C5 for YRC256-ZW3 (Interconnected Keyless Touch Screen Deadbolt)
- 0x4DD5 for YRD652-ZW3 (2nd Generation Keyless Touch Screen Deadbolt)
- 0x4DD2 for NF-YRD622-ZW3 (2nd Generation Keyed Touch Screen Deadbolt)
- 0x4DD1 for NF-YRD612-ZW3 (2nd Generation Keyed Push Button Deadbolt)
- 0x4DC5 for YRC652-ZW3 (2nd Generation Interconnected Keyless Touch Screen Deadbolt)
- 0x4DC2 for NF-YRC622-ZW3 (2nd Generation Interconnected Keyed Touch Screen Deadbolt)
- 0x4DC1 for NF-YRC612-ZW3 (2nd Generation Interconnected Keyed Push Button Deadbolt)
- 0x52D2 for YRD622-ZW3 (2nd Generation Fire Rated Keyed Touch Screen Deadbolt)
- 0x52D4 for YRD642-ZW3 (2nd Generation Fire Rated Keyless Touch Screen Deadbolt)
- 0x52C2 for YRC622-ZW3 (2nd Generation Fire Rated Keyed Interconnected Touch Screen Deadbolt)
- 0x52C4 for YRC642-ZW3 (2nd Generation Fire Rated Keyless Interconnected Touch Screen Deadbolt)
- 0x45D1 for YRD410-ZW3 (2nd Generation Assure Keyed Push Button Deadbolt)
- 0x45D2 for YRD420-ZW3 (2nd Generation Assure Keyed Touch Screen Deadbolt)
- 0x45D3 for YRD430-ZW3 (2nd Generation Assure Keyless Push Button Deadbolt)
- 0x45D5 for YRD450-ZW3 (2nd Generation Assure Keyless Touch Screen Deadbolt)
-

- Product Type ID:
  - 0x8004 for YRD216-ZW3 & YRCD216-ZW3 (Push Button Deadbolt)
  - 0x8002 for YRD226-ZW3, YRC226-ZW3, YRD256-ZW3, & YRC256-ZW3 (Touch Screen Deadbolt)
  - 0x8109 for YRD652-ZW3, YRC652-ZW3, NF-YRD622-ZW3, & NF-YRC622-ZW3 (2nd Generation Touch Screen Deadbolt)
  - 0x810A for NF-YRD612-ZW3 & NF-YRC612-ZW3 (2nd Generation Push Button Deadbolt)

- 0x8103 for YRC/D622-ZW3 & YRC/D642-ZW3 (2nd Generation Fire Rated Touch Screen Deadbolt)
- 0x8104 for YRD410-ZW3, YRD420-ZW3, YRD430-ZW3 & YRD450-ZW3 (2nd Generation Assure Deadbolt)

Table 1 - First 2 Digits of Product ID

	Z-Wave™ Type			Platform					Hex Value
[0x8004/0x8002]-ZW2	0	0	0	0	0	1	1	0	***0x06***
[0x8004/0x8002]-ZW3	0	1	0	0	0	1	1	0	***0x46***
[0x8109/0x810A]-ZW2	0	0	0	0	1	1	0	1	***0x0D***
[0x8109/0x810A]-ZW3	0	1	0	0	1	1	0	1	***0x4D***
[0x8103]-ZW2	0	0	0	1	0	0	1	0	**0x12**
[0x8103]-ZW3	0	1	0	1	0	0	1	0	**0x52**
[0x8104]-ZW2	0	0	0	0	0	1	0	1	***0x05***
[0x8104]-ZW3	0	1	0	0	0	1	0	1	***0x45***

Command Class Security, Version 1

This command class has been implemented per the Z-Wave™ Specification.

Command Class Security 2, Version 1

This command class has been implemented per the Z-Wave™ Specification.

Command Class Device Reset Locally, Version 1*

* This command class requires security.

The Yale door locks covered in this guide can be reset to their factory default settings by manually resetting the lock or by BLE command via app for BLE locks (by following the procedure outlined in the specific lock's manual).

Upon factory reset, all Z-Wave™ network settings are cleared, all the user codes are erased from the lock (including the master code), and all configurable settings are reset to default values, except for the language setting. A factory reset leaves the lock in a completely unsecure state (waiting for master code to be set), so care should be taken if using the configuration parameter to perform a remote reset. However, if the DUT is unenrolled/excluded from the network through the device menu mode, then the user code database and configuration settings will not be reset to the defaults.

Command Class Power Level, Version 1*

* This command class requires security.

This command class has been implemented per the Z-Wave™ Specification.

The Power Level command class was implemented to allow controllers to set the transmit power for the door lock. This could be useful in large networks with many nodes, so that the lock can find working routes back to the controller while transmitting at a lower power. This ensures robust routes when the normal transmit power level is restored.

Currently there is no way to initiate a low power enrollment; this command class can only be used once the lock is enrolled successfully.

Command Class Version, Version 3*

* This command class requires security.

The Yale Real Living locks are a multi-processor system with 1 additional firmware target. All processors can be updated through the Firmware Update Meta Data command class. The firmware targets are numbered as follows:

- Firmware Target 0 = Z-Wave™ Chip
- Firmware Target 1 = Lock Processor

To identify the firmware version for each target, the hex data in the firmware version report must be converted to decimal prior to combining major and minor version into the full version.

After a controller sends a Version Get command the log will display the Version Report similar to the below:

```
Send VERSION_GET to node 16 started
Send VERSION_GET to node 16 completed in 00:00:01.242
Rx [S2_ACCESS] VERSION_REPORT(86 12) + 03 07 10 02 22 02 01 2C 00
```

The above Version Report will be defined as this in the Z-Wave™ sniffer tool, Zniffer:

For Firmware Target 0, the Firmware 0 Version (0x02) and Sub version (0x22) translate to module firmware decimal value of "2.34".

For Firmware Target 1 (the data under vg1), Firmware Version (0x2C) and Sub version (0x00) translate to lock firmware decimal value of "4.3.00".

Command Class Battery, Version 1*

* This command class requires security.

Per the Z-Wave Plus ™ Specification, the lock will send a Battery Report with a value of 0xFF to the Lifeline node when a critical battery level is reached (starting at about 3.8V for Product Type IDs 0x8002 & 0x8004 and starting at about 4.2V for Product Type ID 0x8109, 0x810A, 0x8103 & 0x8104). In addition, the Yale Locks provide 2 earlier low battery alarms through the notification command class (see Table 7 - Notification Table).

Low battery alarms will be generated if the lock is in a low battery state during one of the following events: any motor activation (keypad lock/unlock, RF lock/unlock, etc.), controller sends Get Battery command, or the unsolicited battery report was triggered. Yale locks will generate an unsolicited Battery Report every 8 hours if a node is listed in the Lifeline Group.

Command Class Door Lock, Version 4*

* This command class requires security.

Yale Z-Wave Plus ™ locks support three door lock modes: Door Secured (0xFF), Door Unsecured (0x00), and Door Unsecured with timeout (0x01). When Auto Relock is enabled, the lock will automatically relock after all unlock events. Yale Z-Wave Plus ™ locks do not support any of the "Door Unsecured for outside Door Handles" (0x20, 0x21) or "Door Unsecured for inside Door Handles" (0x10, 0x11) modes.

Command Class Door Lock Logging, Version 1*

* This command class requires security.

This command class has been implemented per the Z-Wave™ Specification.

Command Class Schedule Entry Lock, Version 3*

* This command class requires security.

Yale locks support Year Day Schedule types and Daily Repeating Schedule types. Yale locks allow the controller to apply multiple schedules to a single user. Each user has 1 Year Day Schedule slot (Slot ID 1) and 7 Daily Repeating slots (Slot IDs 1 – 7). If user scheduling is used in the lock, then the controller **MUST** set the lock's time using the Time Parameters command class.

Command Class User Code, Version 2*

* This command class requires security.

Versions 1 and 2 of this command class can address user code slots 1 through 250 via the User Code Set/Get/Report commands. Version 2 of this command class also includes extended versions of each of these commands, used to address the extended range of users.

Table 2 – Expected Reports for Set/Get Commands

Command	Slots 1-250	Slot 251	Slots 252-254	Slot 255	Slots 256-500
User Code CC v1/v2: User Code Get	User Code Report	User Code Report	User Code Report	User Code Report	N/A
User Code CC v1/v2: User Code Set	User Code Report	Master Code Report	User Code Report	User Code Report	N/A
User Code CC v2: Extended User Code Get	Extended User Code Report	Extended User Code Report	Extended User Code Report	Extended User Code Report	Extended User Code Report
User Code CC v2: Extended User Code Set	Extended User Code Report	Extended User Code Report	Extended User Code Report	Extended User Code Report	Extended User Code Report

The master code can be accessed (read/write) using slot 251 (0xFB), if using version 1 of this command class. For version 2, the Master Code Set/Get/Report commands must be used.

Yale locks do not support bulk commands (setting or getting multiple user codes at once) or CRC functionality for this command class.

It should be noted that the lock's operation mode (called "User Code Keypad Mode" in this command class) can be modified through Version 2 of this command class, or through parameter 8 of the Configuration command class. This is the only parameter that can be modified through more than one command class.

The following implementation notes apply specifically to non-access user codes:

- The usage of non-access users has changed slightly with ZW3, compared to ZW2, but is still backwards compatible. If a User Code Set is transmitted using version 1 of the command class, then the lock will accept a value of 0x04 as the status for the non-access user.
- Previously, a value of 0x04 was reserved for setting non-Access users, as stated above. When using version 2 of this command class, a non-Access (now called "Messaging") user ID status is assigned a value of 0x03. This value of 0x03 should be used with the Extended User Code Set command.
- A non-access user can be identical to a "normal" PIN code, aside from the fact that it does *not* grant access.
- Any available user code slot (except the master code) can be used to store a non-access user code.
- Schedules can be applied to non-access users.

Yale locks support the following User ID Status values:

Table 3 - User ID Status User Code CC v1 vs v2

User ID Status	User Code CC v1 Set	User Code CC v1 Report Value
Description	*Value*	*Value*
Available	0x00	0x00
Enabled / Grant Access	0x01	0x01
Disabled	0x02	0x03
	0x03	
Messaging: The user code is accepted, but the lock does not grant access to the user. Instead, it generates an alarm to the Lifeline and does NOT take preventative actions for further attempts to enter the User ID and/or User Code.	0x04	0x04
One-Time Use: This PIN is disabled immediately after being used for a successful unlock operation.	0x06	0x06
Expiring: This PIN is disabled once a specified amount of time has passed after being used for a successful unlock operation. The expiration time is set through the Configuration command class.	0x07	0x07

User ID Status	User Code CC v2: Extended User Code Set	User Code CC v2: Extended User Code Report Value
Description	*Value*	*Value*
Available	0x00	0x00
Enabled / Grant Access	0x01	0x01
Disabled	0x02	0x02
Messaging: The user code is accepted, but the lock does not grant access to the user. Instead, it generates an alarm to the Lifeline and does NOT take preventative actions for further attempts to enter the User ID and/or User Code.	0x03	0x03
One-Time Use: This PIN is disabled immediately after being used for a successful unlock operation.	0x06	0x06
Expiring: This PIN is disabled once a specified amount of time has passed after being used for a successful unlock operation. The expiration time is set through the Configuration command class.	0x07	0x07

Command Class Time Parameters, Version 1*

* This command class requires security.

The controller must set the Time Parameters in the lock anytime the lock loses power. If the time is not set by the controller, then user codes with schedules applied to them cannot be granted access. When the lock is powered up, it will generate a Notification Report to indicate to the controller that power has been applied (Alarm V1 Type = 0x82, Alarm V1 Level = 0x00, Event Type = 0x08, Event Value = 0x01). This indicates to the controller that the lock no longer has a valid time set.

If the controller does not support either the Time CC or Time Parameters CC, then scheduled users will not have access.

Command Class Time, Version 2

The controller must set the Time Parameters in the lock anytime the lock loses power. Even though the Time CC is not secure, the Time Set command must be issued at the same or higher security level as when the device was enrolled in order for time to be set otherwise it will be rejected by the device. If the time is not set by the controller, then user codes with schedules applied to them cannot be granted access. When the lock is powered up, it will generate a Notification Report to indicate to the controller that power has been applied (Alarm V1 Type = 0x82, Alarm V1 Level = 0x00, Event Type = 0x08, Event Value = 0x01). This indicates to the controller that the lock no longer has a valid time set.

If the controller does not support either the Time CC or Time Parameters CC, then scheduled users will not have access. A time sync should occur every 8 hours, starting with the Time CC. If there is no response within a minute, the next step is to issue a Time Parameters Get to sync time.

Command Class Firmware Update Meta Data, Version 5*

* This command class requires security.

Yale Z-Wave Plus ™ locks support over-the-air (OTA) upgrading of 2 firmware targets:

1. Firmware Target 0: Z-Wave™ chip
2. Firmware Target 1: The lock main processor

Firmware Target 0 is used to determine the correct Z-Wave™ processor image to download. ID 1 is always 0xA5, to signal this is an ASSA ABLOY Z-Wave™ image, and ID 2 is specific to the region, with the lower nibble being 0x0 and the upper nibble being the value in Table 4 - Region-Specific Values for Firmware ID 0. Eventually the lower nibble will be used to separate builds within a specific region, but this will also be 0 for now, since there is only a single build of firmware.

Table 4 - Region-Specific Values for Firmware ID 0 (Upper Nibble)

Region	Value
ANZ	0x1
CN	0x2
EU	0x3
HK	0x4
IL	0x5
IN	0x6
JP	0x7
KR	0x8
RU	0x9
US	0xA

Firmware 1 target will depend on which version of the lock is in use (mapped to the Product Type ID).

- For YRC/D216-ZW3 (Push Button interface), Firmware 1 ID = 0x8004.
- For YRC/D226-ZW3 & YRC/D256-ZW3 (Touch Screen interface), Firmware 1 ID = 0x8002.
- For YRC/D652-ZW3 & NF-YRC/D622-ZW3 (2nd Generation Touch Screen interface), Firmware 1 ID = 0x8109.
- For NF-YRC/D612-ZW3 (2nd Generation Push Button interface), Firmware 1 ID = 0x810A.
- For YRC/D622-ZW3 & YRC/D642-ZW3 (2nd Generation Fire Rated Touch Screen Deadbolt), Firmware 1 ID = 0x8103
- For YRD410-ZW3, YRD420-ZW3, YRD430-ZW3 & YRD450-ZW3 (2nd Generation Assure Deadbolt), Firmware 1 ID = 0x8104

After an OTA is performed (a Firmware Update Status Report should return with successful), there is an additional step internally where we write/apply the image to the lock/module. When the image is being applied to the lock, the lock is unresponsive until completion of the apply image. Once the completion of the OTA image is applied the lock silently reboots.

The following is the time it takes for each product to complete OTA image apply phase:

- For Z-Wave™ Radio Chip, ~10 seconds
- For YRC/D216-ZW3 (Push Button interface), ~ 3 minutes
- For YRC/D226-ZW3 and YRC/D256-ZW3 (Touch Screen interface), ~ 3 minutes
- For YRC/D652-ZW3 & NF-YRC/D622-ZW3 (2nd Generation Touch Screen interface), ~ 13 minutes
- For NF-YRC/D612-ZW3 (2nd Generation Push Button interface), ~ 13 minutes
- For YRC/D622-ZW3 & YRC/D642-ZW3 (2nd Generation Fire Rated Touch Screen Deadbolt), ~23 minutes
- For YRD410-ZW3, YRD420-ZW3, YRD430-ZW3 & YRD450-ZW3 (2nd Generation Assure Deadbolt), ~23 minutes (full image) ~3 minutes (patch/differential image)

Command Class Association, Version 2*

* This command class requires security.

This command class has been implemented per the Z-Wave™ Specification.

Command Class Multi Channel Association, Version 3*

* This command class requires security.

This command class has been implemented per the Z-Wave™ Specification.

Yale locks support only one group, which can contain up to 5 nodes.

Command Class Association Group Info, Version 3*

* Command Class Requires Security

Yale locks support the Lifeline Association Group.

Table 5 - Association Table

Group ID	Maximum Nodes	Description	Commands

1	5	Lifeline	• Command_Class Battery
			  ○ Battery_Report
			• Command_Class_Configuration
			  ○ Configuration_Report
			• Command_Class_Notification
			  ○ Notification_Report
			• Command_Class_Door_Lock
			  ○ Door_Lock_Operation_Report
			  ○ Door Lock Configuration Report
			• Command_Class_Device_Reset_Locally
			  ○ Device_Reset_Locally_Notification
			• Command_Class_User_Code
			  ○ User Code Report
			  ○ Extended User Code Report
			  ○ User Code Keypad Mode Report
			  ○ Master Code Report

The following are the actions to trigger the reports:

Table 6 – Lifeline Report Trigger Table

Report Command	**RF Trigger**	**Manual Trigger**
Battery Report	Any RF Lock Operation when lock is under the battery thresholds	Any manual/keypad Lock Operation when lock is under the battery thresholds or Power Cycle Lock
Configuration Report	Configuration Set	Change Lock Settings via Keypad
Notification Report (Access Control)	Any RF Lock Operation	Manual or Keypad Unlock/Lock
Notification Report (Power Management)	Any RF Lock Operation when lock is under the battery thresholds	Any manual/keypad Lock Operation when lock is under the battery thresholds or Power Cycle Lock
Door Lock Operation Report		Manual or Keypad Unlock/Lock
Door Lock Configuration Report	Door Lock Configuration Set	Enable/Disable Auto-Relock Feature via Keypad
Device Reset Locally Notification		HW Factory Reset
User Code Report	Add/Delete User Code via User Code Set Command	Add/Delete User Code via Keypad from Slots 1-250
Extended User Code Report	Add/Delete User Code via Extended User Code Set Command	Add/Delete User Code via Keypad from Slots 251-500
User Code Keypad Mode Report	User Code Keypad Mode Set	Enable/Disable Vacation Mode or Privacy Mode (refer to Installation Manual)
Master Code Report	Master Code Set	Update/Modify Master Code via Keypad

Command Class Notification, Version 8*

* This command class requires security.

Table 7 - Notification Table

Alarm Reports	Alarm type	Alarm Level	Description	Notification Type	Event
Deadbolt Jammed	0x09	0x01	Deadbolt jammed while locking	0x06	0x0B
		0x02	Deadbolt jammed while unlocking	0x06	0x0B
Keypad Lock	0x12	0x (01 - max users)	Where Alarm level represents user slot number	0x06	0x05
Keypad Unlock	0x13	0x(01-max users)	Where Alarm level represents user slot number (0x00 = Master Code)	0x06	0X06
Manual Lock	0x15	0x01	by key cylinder or inside thumb-turn	0x06	0x01
		0x02	by touch function (lock and leave)	0x06	0x01
		0x03	By inside button	0x06	0x01

Manual Unlock	0x16	0x01	By key cylinder or inside thumb turn	0x06	0x02
RF Operate Lock	0x18	0x01	by RF module	0x06	0x03
RF Operate Unlock	0x19	0x01	by RF module	0x06	0X04
Auto Lock Operate Locked	0x1B	0x01	Auto re-lock cycle complete, locked.	0x06	0x09
User deleted	0x21	0x(01-max users)	User was deleted. Alarm level = user slot number	0x06	0X0D (single)
		0x00	All User codes were deleted		0X0C (all)
Non-Access	0x26	0x(01-max users)	A Non-Access Code was entered at the lock. Where alarm level represents user slot number	0x06	0xFE
Door State	0x2B	0x00	Door is open	0x06	0x16
		0x01	Door is closed	0x06	0x17
Daily Repeating Schedule Set/Erased	0x60	0x(01-max users)	Schedule(s) has been set/erased for specified user ID	0x06	0xFE

Daily Repeating Schedule Enabled/Disabled	0x61	0x(01-max users)	Daily Repeating Schedule(s) were enabled/disabled for User ID specified in Alarm Level. If Alarm Level = 0xFFFF then all users were affected.	0x06	0xFE
Year Day Schedule Set/Erased	0x62	0x(01-max users)	Schedule(s) has been set/erased for specified user ID	0x06	0xFE
Year Day Schedule Enabled/Disabled	0x63	0x(01-max users)	Year Day Schedule(s) were Enabled/Disabled for User ID specified in Alarm Level. If Alarm Level = 0xFFFF then all users were affected.	0x06	0xFE
All Schedule Types Erased	0x64	0x(01-max users)	All Schedule Types were Set (erased/set) for User ID specified in Alarm Level. If Alarm Level = 0xFFFF then all users were affected.	0x06	0xFE
All Schedule Types Enabled/Disabled	0x65	0x(01-max users)	Schedule(s) has been enable/disabled for specified user ID	0x06	0xFE
Master Code changed	0x70	0x00	Master code was changed at keypad	0x06	0x12
		0x00	Master code was changed over RF	0x06	0x0E
User added		0x(01-max users)	User added. Alarm level = user slot number	0x06	0X0E
Battery is fully charged	0x80	0x05	After a low battery alert was observed, the lock was powered down and powered back up with full battery.	0x08	0x0D
Door Lock needs Time set / RF Module Power Cycled	0x82	0x00	Power to the lock was restored and the locks RTC was cleared. The controller should set the time to ensure proper logging.	0x08	0x01
Disabled user entered at keypad	0x83	0x(01-max users)	A disabled user pin code was entered at the keypad	0x06	0xFE
Valid user but outside of schedule	0x84	0x(01-max users)	A valid user can be both a normal user and a Non-Access user. If a non-access	0x06	0xFE

			user is out of schedule this alarm will be sent instead of the non-access alarm.		
Tamper Alarm	0xA1	0x01	keypad attempts exceed code entry limit	0x06	0X10
		0x02	front escutcheon removed from main	0x06	0xFE
Low Battery Alarms*	0xA7	0x(Current %)	***Low Battery*** Starting at 4.0V **(0x8002 & 0x8004)**; 4.6V **(0x8109, 0x810A, 0x8103 & 0x8104)**	0x08	0x0A
	0xA8	0x(Current %)	***Critical Battery Level*** Starting at 3.9V **(0x8002 & 0x8004)**; 4.4V **(0x8109, 0x810A, 0x8103 & 0x8104)**	0x08	0x0B
Integrated BLE Lock**	0xE2	0x00	Integrated BLE Lock	0x06	0x03
		0x01	Integrated BLE Auto Relock	0x06	0x09
Integrated BLE Unlock**	0xE3	0x00	Integrated BLE Unlock	0x06	0X04
		0x01	Integrated BLE Auto Unlock	0x06	0X04
Homekit BLE Lock**	0xE4	0x00	Integrated Homekit BLE Lock	0x06	0x03
Homekit BLE Unlock**	0xE5	0x00	Integrated Homekit BLE Unlock	0x06	0X04

*The Yale lock also supports a 3rd low battery alarm: too low to operate. This alarm is sent out as a Battery Report (with value = 0xFF) through the Battery Command Class. This is the last low battery alarm level before the product stops functioning. Starting at 3.8V (0x8002 & 0x8004); 4.2V (0x8109 ,0x810A, 0x8103 & 0x8104)

**Only supported by YRD410/420/430/450

Command Class Configuration, Version 4*

* This command class requires security.

Table 8 - Configurable Parameters

Param. Num.	Name	Length	Configuration Properties			Info	Length of Info String (max length allowed is 90)
			Min	Max	Default		
1	Volume	1 byte	0x01 (High Volume)	0x03 (Silent)	0x02 (Low Volume) **[0x8002, 0x8109, 0x8103]**	Set Volume Level to high (1), low (2), or silent (3). **[0x8002, 0x8109, 0x8103 & 0x8104]**	53
					0x01 (High Volume) **[0x810A, 0x8004 & 0x8104]**	Set Volume Level to high (1) or silent (3). **[0x810A & 0x8004]**	44
2	Auto Relock	1 byte	0x00 (Disable)	0xFF (Enable)	0x00 (Disable)	Set Auto Relock feature to enable or disable.	45
3	Relock time	1 byte	0x0A (10 seconds)	0xB4 (180 seconds)	0x1E (30 seconds)	Adjust the time your lock will auto relock.	43

4	Wrong Code Entry Limit	1 byte	0x03	0x0A	0x05	Adjust the limit for wrong code entries allowed by your lock**.**	61
5	Language*	1 byte	0x01 (English)	0x03 (French)	0x01 (English)	Set the language to English (1), Spanish (2), or French (3).	60
7	Shut down time	1 byte	0x0A (10 seconds)	0x84 (132 seconds)	0x3C (60 seconds)	Adjust the time your lock is shutdown after reaching its wrong code entry limit.	80
8	Operating mode**	1 byte	0x00 (Normal Mode)	0x02 (Privacy Mode) **[0x8002, 0x8004, 0x8109 & 0x810A]**	0x00 (Normal Mode)	Set the Operating Mode to normal mode(0), vacation mode(1), privacy mode(2). **[0x8002, 0x8004, 0x8109 & 0x810A]**	75
						Set the Operating Mode to normal mode, keypad disable mode or passage mode. **[0x8104]**	76
				0x03 (Passage Mode) **[0x8103 & 0x8104]**		Set the Operating Mode to normal mode, vacation mode, privacy mode or passage mode. **[0x8103]**	83

11	One Touch Locking	1 byte	0x00 (Disable)	0xFF (Enable)	0xFF (Enable)	Set One Touch Locking feature to enable or disable.	51
12	Privacy Button	1 byte	0x00 (Disable)	0xFF (Enable)	0x00 (Disable)	Set Privacy Button feature to enable or disable.	48
13	Lock Status LED	1 byte	0x00 (Disable)	0xFF (Enable)	0x00 (Disable)	Set Lock Status LED feature to enable or disable.	49
16	Escape Return Mode***	1 byte	0x00 (Disable)	0xFF (Enable) ****	0x00 (Disable)	Enable or Disable Escape Return Mode	36
21	Eco Mode On/Off***	1 byte	0x00 (Disable)	0xFF (Enable)	0x00 (Disable)	Enable or Disable Eco Mode feature	34
28	Expiring Pin Code Enabled Time	1 byte	0x00 (Disable)	0xFF (127 Hours)	0x00 (Disable)	Timeout value used to determine time after first entry is triggered.	68

*Only supported by YRC/D226/256/652/622/642 & NF-YRC/D622

**When Operation Mode feature is set to Passage Mode, this also results in disabling the following configuration parameters 2 (Auto Relock feature).

*** Only supported by YRC/D622/642

**** When this Escape Return Mode feature is enabled, this also results in disabling the following configuration parameters 2 (Auto Relock feature) and 11 (One Touch Locking feature).

Command Class Application Status, Version 1

This command class has been implemented per the Z-Wave™ Specification.

Command Class Transport Service, Version 2

This command class has been implemented per the Z-Wave™ Specification.

Command Class Supervision, Version 1

This command class has been implemented per the Z-Wave™ Specification.

Command Class Indicator, Version 3*

* This command class requires security.

The indicator feature is set by using Indicator ID 0x50 to identify the node and Property ID 0x02 or 0x03, 0x04 and 0x05.

Table 9 – Lock UI for Indicator Set Overview

Indicator Set	Lock Exterior	Lock Interior
OFF	Keypad LED is OFF	Inside LED OFF
ON	YRC/D226/256/652/622/642, NF-YRC/D622 & YRD410/420/430/450: Numbers 0-9 on Touch Screen Flash YRC/D216 & NF-YRC/D612: All buttons Flash	Inside LED Flashes

In order to set the Indicator ID 0x50 with Property 0x02, set values to 0x00 for off and 0x01…0x63 or 0xFF for on.

In order to properly set the Indicator ID 0x50 with Properties 0x03, 0x04 and 0x05, we had to map the values to our lock's specific blink rate.

Table 10 – Minimum Values for Indicator Set Property IDs 0x03, 0x04, & 0x05 to trigger Lock UI

Property ID 0x03 (On/Off Periods) Fixed Value	Property ID 0x04 (On/Off Cycles) Minimum Value	Property ID 0x05 (On time within an On/Off period) Fixed Value
0x14*	0x00...0xFF (per Z-Wave™ Spec)	0x0A*

NOTE: If Property IDs 0x03 and 0x05 are set to value other than the above, then the lock will blink at the different number of cycles than what you have set.

Command Class Basic, Version 2*

* This command class requires security.

This command class is mapped to Door Lock CC:

Table 11 – Basic Mapping Overview

Basic Command	Door Lock Mapped Command
Basic Set (Value)	Door Lock Operation Set (Door Lock Mode)
Basic Report (Current Value = 0x00)	Door Lock Operation Report (Door Lock Mode = 0x00)
Basic Report (Current Value = 0xFF)	Door Lock Operation Report (Door Lock Mode > 0x00)

The Basic Get Current Value, Basic Get Duration, and Basic Get Target Value are mapped to Door Lock Operation Get and Basic Set is directly mapped to Door Lock Operation Set where the Duration is returned as is, but the Value and Target Door Lock State Value of the Basic Report use the following mapping:

Table 12 – Basic Report: Value

Value	Level	State	Door Lock State
0 (0x00)	0%	Off	Unsecure
1..99 (0x01...0x63)	1..100%	On	Secure
100..253 (0x64...0xFD)	Reserved	Reserved	
254 (0xFE)	Unknown	Unknown	Unknown
255 (0xFF)	100%	On	Secure