Yale Locks

Z-Wave Plus System Integrators Guide

Yale Real Living Electronic Deadbolts

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Contents

* Command Class Requires Security

ASSA ABLOY   The global leader in door opening solutions

Yale Z-Wave+ 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 (Inclusion Mode)

• 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.

Unenroll/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, the user code database will not be cleared and the configuration settings will not be reset to the defaults.

Factory Reset (If no Network Controller Present)

• See the Lock Installation Manual
• Please use this procedure only when the network primary controller is missing
or otherwise inoperable.

Supported Command Classes

The Yale Real Living 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 will 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 that is also indicated below.

Specifications used:

- sds12657-11_z-wave_command_class_specification_a-m
- sds12652-12_z-wave_command_class_specification_n-z

Command Class Z-Wave+ Info, Version 2

Role Type: Listening Sleeping Slave (LSS)

Node Type: Z-Wave Plus Node

Installer Icon Type: 0x0300

User Icon Type: 0x0300

Command Class Manufacturer Specific, Version 2

Manufacturer ID: Assa Abloy (0x0129)

Product ID: 0x0600

Product Type ID:

0x8004 – YRD216-ZW2 (Push Button Deadbolt)

0x8002 – YRD226-ZW2/YRD246-ZW2 (Touch Screen Deadbolt)

Command Class Security, Version 1

Per Z-Wave Specification

Command Class Device Reset Locally, Version 1

The Yale door locks can be reset to Factory defaults in one of two ways:

- Manually resetting the lock by following the procedure outlined in the locks specific manual.
- Configurable Parameter 0x0F can be used to trigger a Factory Reset by sending a Configuration Set for Parameter 0x0F with a value of 0x01.

Upon Factory reset all Z-Wave network settings are cleared, all of the User Codes are erased from the lock (including the master code) and all configurable settings are reset to default values except 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 configurable parameter to reset the lock remotely. But if the DUT is unenrolled/excluded from the network through the device menu mode, the user code database and configuration settings will not be reset to the defaults.

Command Class Power Level, Version 1

Per 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 to cause the lock to 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 2

The Yale Real Living locks are a multi-processor system with 1 additional firmware target. All processors can updated through the Firmware Update Meta Data Command Class.

Firmware 0 = Z-Wave Chip

Firmware 1 = Lock Processor

Command Class Battery, Version 1*

* Command Class Requires Security

Per Z-Wave Plus Specification the lock will send a Battery Report with a value of 0xFF to the lifeline node once a critical battery level is reached (starting at about 3.5V). In addition the Yale Locks provide 2 earlier low battery alarms through the notification command class (See 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 2*

* Command Class Requires Security

Yale Z-Wave Plus locks only support 2 door lock modes: Door Secured (0xFF) and Door Unsecured (0x00). Yale locks do not support timed operation from the Door Lock Command Class. Instead the locks implement an Auto Relock Function that can be adjusted through the configuration parameters.

When Auto Relock is enabled the lock will automatically relock after all unlock events. Yale Z-Wave Plus locks do not support the Outside Door Handles Mode bitmask or Inside Door Handles Mode bitmask.

Command Class Door Lock Logging, Version 1*

* Command Class Requires Security

Per Z-Wave Specification.

Command Class Schedule Entry Lock, Version 3*

* Command Class Requires Security

Yale locks supports 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 locks time using the Time Parameters command class.

Command Class User Code, Version 1*

* Command Class Requires Security

Currently due to limitations of the Z-Wave User Code Command class Yale locks only support 250 user codes.

The master code can be accessed (read/write) using slot 0xFB.

Yale locks support multiple different User Status Bytes:

User status byte value	*User Status byte description or meaning*
0	available
1	occupied / enabled
3	occupied / disabled
4	Non Access User (User code is accepted but Lock does not unlock, only generates an alarm to the lifeline)

Command Class Time Parameters, Version 1*

* Command Class Requires Security

The controller must set the Time Parameters in the lock anytime the lock loses powers. 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 it was just

powered up (Alarm V1 type = 0x82, Alarm V1 Level = 0x00). This is used to indicate to the controller that the lock no longer has a valid time set.

Command Class Time, Version 2*

* Command Class Requires Security

The controller must set the Time Parameters in the lock anytime the lock loses powers. 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 it was just powered up (Alarm V1 type = 0x82, Alarm V1 Level = 0x00). This is used to indicate to the controller that the lock no longer has a valid time set.

Command Class Firmware Update Meta Data, Version 3*

* Command Class Requires Security

Yale Z-Wave Plus locks support over the air upgrading of 2 firmware targets; firmware 0 is the Z-Wave chip and firmware 1 is the lock main processor.

Firmware 0 target will always have the Firmware 0 ID of 0x0301.

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

For YRD216-ZW2 (Push Button interface) Firmware 1 ID = 0x8004

Or

For YRD226-ZW2/YRD246-ZW2/YRD446-ZW2 (Touch Screen interface) Firmware 1 ID = 0x8002

Command Class Association, Version 2*

* Command Class Requires Security

Per Z-Wave Specification.

Command Class Association Group Info, Version 1*

* Command Class Requires Security

Yale locks support the Lifeline association group.

Association Table

Group ID	Maximum Nodes	Description	Commands
1	1	Lifeline	Command_Class_Battery, Battery_Report ; Command_Class_Notification, Notification_Report; Command_Class_Configuration, Configuration_Report; Command_Class_Device_reset_locally, Device_Reset_locally_notification

Command Class Notification, Version 4*

* Command Class Requires Security

Notifications Table

Alarm Reports	Alarm type	Alarm Level	Description	Notification Type	Event
Master Code changed.	0x70	0x00	Master code was changed at keypad	0x06	0x12
		0xFB	Master code was changed over RF	0x06	0x0E
User added		0x(01-max users)	User added. Alarm level = user slot number	0x06	0X0E
User deleted	0x21	0x(01-max users)	User was deleted. Alarm level = user slot number	0x06	0X0D(0X0C)
Tamper Alarm	0xA1	0x01	keypad attempts exceed code entry limit	0x06	0X10
		0x02	front escutcheon removed from main	0x06	0xFE
		0x03	Keypad attempts exceed master code entry limit (same as code entry limit except # is pressed (to get into the menu), instead of * (to unlock)	0x06	0X10
Manual Unlock	0x16	0x01	By key cylinder or inside thumb turn	0x06	0x02
RF Operate Unlock	0x19	0x01	by RF module	0x06	0X04
Keypad Unlock	0x13	0x(01-max users)	Where Alarm level represents user slot number (0xFB = 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

RF Operate Lock	0x18	0x01	by RF module	0x06	0x03
Keypad Lock	0x12	0x (01 – max users)	Where Alarm level represents user slot number	0x06	0x05
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
Mobile Access**	0xB0	0x(00 or FF)	Alarm triggered when mobile credential (YRD446 with BLE) used to open the lock	0x06	0xFE
Configuration Parameters Updated via Mobile**	0xB2	0x01	A mobile app was used to update the entire configuration parameter table via a mobile credential	0x06	0xFE
Low Battery Alarms***	0xA8	0x(Current %)	Critical Battery Level (Starting at 3.7V)	0x08	0x0B
	0xA7	0x(Current %)	Low Battery (Starting at 3.8V)	0x08	0x0A
Auto Lock Operate Locked	0x1B	0x01	Auto re-lock cycle complete, locked.	0x06	0x09
Duplicate Pin-code error	0x71	0x (01-max users)	Where Alarm level represents user slot number Alarm generated in response to add user RF cmd. This alarm is not generated when attempting to add duplicate pin at the keypad. The lock simply denies it and plays the "Denied". Trying to duplicate the master code will result in a 0x71 0x00 alarm report.	0x06	0x0F

RF Module Power Cycled	0x82	0x00	Power to RFM was restored, sent by RF module. The lock doesn't send any alarm to the RF module when power is cycled.	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 user is out of schedule this alarm will be sent instead of the non-access alarm.	0x06	0xFE
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)	Schedule(s) has been enabled/disabled for specified user ID	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)	Schedule(s) has been enabled/disabled for specified user ID	0x06	0xFE
All Schedule Types Erased	0x64	0x(01-max users)	Schedule(s) has been set/erased for specified user ID	0x06	0xFE
All Schedule Types Enabled/Disabled	0x65	0x(01-max users)	Schedule(s) has been enable/disabled for specified user ID	0x06	0xFE

** - Only supported by model YRD446 which includes extra hardware for BLE credential support

*** - 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.

Command Class Configuration, Version 1*

* Command Class Requires Security

Configurable Parameters

Configuration Parameters	*Parameter Number*	*Size*	*Description*
Silent mode on/off	1	1 byte	YRD226/246/446 - Level control, 1 = High Volume, 2 = Low Volume, 3 = Silent. **Default is 2 or Low Volume** YRD216 - Level control, 1 = High Volume, 3 = Silent. **Default is 1 or High Volume**
Auto Relock on/off	2	1 byte	**0x00 = OFF**, 0xFF = ON **default is 0x00 or OFF**
Auto Relock time	3	1 byte	10 to 180 seconds **default is 30 seconds**
Wrong Code Entry Limit	4	1 byte	3 to 10 **default is 5 times**
Language	5	1 byte	1=English, 2=Spanish, 3=French **default is 1= English**
Shut down time (after wrong code entries)	7	1 byte	10 to 180 seconds **default is 60 seconds**
operating mode	8	1 byte	**00 = normal mode (this is the default mode)** 01 = vacation mode, keypad lockout 02 = privacy mode, no keypad. RF Unlock will work
One Touch Locking	11	1 byte	0x00 = OFF, 0xFF = ON **default is 0xFF or ON.**
Privacy Button	12	1 byte	0x00 = OFF, 0xFF = ON **default is 0x00 or OFF**
Lock Status LED	13	1 byte	0x00 = OFF, 0xFF = ON **default is 0x00 or OFF**
Reset To Factory Defaults	15	1 byte	01 = Lock will execute Reset To Factory. **No default value**