



DANALOCKV3-BTZB



DanalockV3-BTZB

## People

Firmware engineer

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## Revision history

Revision	Date	Notes
0.0.11	2017-01-08	Initial draft.

## Source

Word	Description
Zigbee Cluster Library Specification	Cluster Library 07-5123 Revision 7

## Abbreviations

Word	Description
DoC or DOC	Declaration of Conformity
PICS	Protocol Implementation Conformance Statement(s).
ZCL	ZigBee Cluster Library
ZED	ZigBee End Device

## Vocabulary

Word	Description
NodeID	The number a node has in the network
Binding	A persistent representation of the address of a corresponding remote cluster that maps the local cluster to the final network destination address. The destination address is either broadcast, groupcast (Group Identifier), or unicast (node address & endpoint).



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## 1 Introduction

Name	Value
Manufacture Name	Danalock
Model ID	V3-BTZB
Zigbee version	3.0
Manufacturer ID	0x115C
Profile ID	Home Automation V1.2.1 (0x0104)
Device ID	HA Door Lock (0x000A)
ZigBee Device Type	Sleepy End Device
Active End Points	1
Binding table size	16
Reporting Attribute table size	32
TX Power	+12 dBm

## 2 Commissioning

- To commission to Danalock into a network, push the button one time.
- To remove the Zigbee lock from a network, push the button one time.

After the Danalock has connected to a network. The LED will blink white for 3 minutes.

The Danalock V3-BTZB has two antennas Bluetooth Smart and Zigbee. It is recommended that the user connects the lock to a smart phone via Bluetooth before connecting the lock to a Zigbee network. If the lock is connected to a Zigbee network first the Bluetooth antenna is automatic disable because of security and battery conservation.

## 3 Reporting

The lock supports reporting of attributes when the recipient is in the binding table.

Cluster	Identifier	Manuf#	Name	Min. interval	Max interval	Reportable Change
0x0001	0x0020		Battery Voltage	0x0001	0xFFFFE	1
0x0001	0x0021		Battery Percentage Remaining	0x0001	0xFFFFE	1
0x0001	0x003E		Battery Alarm Status	0x0001	0xFFFFE	Not Analog
0x0101	0x0000		Lock State	0x0001	0xFFFFE	Not Analog
0x0101	0x0020		EnableLogging	0x0001	0xFFFFE	Not Analog
0x0101	0x0022		LEDSettings	0x0001	0xFFFFE	Not Analog
0x0101	0x0023		AutoRelockTime	0x0001	0xFFFFE	Not Analog
0x0101	0x0025		OperatingMode	0x0001	0xFFFFE	Not Analog
0x0101	0x0027		DefaultConfigurationRegister	0x0001	0xFFFFE	Not Analog
0x0101	0x0028		EnableLocalProgramming	0x0001	0xFFFFE	Not Analog
0x0101	0x0030		WrongCodeEntryLimit	0x0001	0xFFFFE	Not Analog
0x0101	0x0031		UserCodeTemporaryDisableTime	0x0001	0xFFFFE	Not Analog
0x0101	0x0032		SendPINOverTheAir	0x0001	0xFFFFE	Not Analog
0x0101	0x0033		RequirePINforRFOperation	0x0001	0xFFFFE	Not Analog
0x0101	0x0034		SecurityLevel	0x0001	0xFFFFE	Not Analog



0x0101	0x0040		AlarmMask	0x0001	0xFFFE	Not Analog
0x0101	0x0042		RFOperationEventMask	0x0001	0xFFFE	Not Analog
0x0101	0x0043		ManualOperationEventMask	0x0001	0xFFFE	Not Analog
0x0101	0x0000	0x115C	TwistAssist	0x0001	0xFFFE	Not Analog
0x0101	0x0001	0x115C	Blocked2Blocked	0x0001	0xFFFE	Not Analog
0x0101	0x0002	0x115C	HoldAndRelease	0x0001	0xFFFE	0x01

The attributes Battery Percentage Remaining and Battery Voltage are only updated when the motor is running. The temperature sensor is by default disabled. To enable the temperature sensor, adjust the max interval to the sample time. Lock State is updated when the lock changes state, if there are problems with this normally it is because the Danalock needs to be calibrated.

## 4 Supported Clusters

Server side	Client side
Mandatory	
Basic (0x0000)	
Door lock (0x0101) (Manufacturer Specific Extended)	
Identify (0x0003)	
Optional	
Power Configuration (0x0001)	Time (0x000A)
Alarms (0x0009)	OTA (0x0019)
Poll Control (0x0020)	
Diagnostics (0x0B05)	
Danalock Cluster (0xFCFF) Manufacturer Specific	



## 4.1 Basic Cluster

The Danalock is a client when it asks the gateway for its name.

<b>Cluster Identifier</b>	<b>0x0000</b>
Supported as	Server/Client

### 4.1.1 Attributes

Identifier	Name	Default
0x0000	ZCL Version	0x02
0x0001	Application version	0x02
0x0002	Stack Version	0x03
0x0003	Hardware version	0x05
0x0004	Manufacturer name	“Danalock”
0x0005	Model identifier	“V3-BTZB”
0x0006	Date Code	Returns production date
0x0007	Power Source	0x03 (Battery)
0xFFFD	Cluster revision	0x01

#### 4.1.1.1 StackVersion Attribute

0x03 = EmberZNet PRO 6.3 GA

#### 4.1.1.2 HWVersion Attribute

0x05 = 101-029\_E1

#### 4.1.1.3 Date Code

Production date in the format YYYYMMDD.

### 4.1.2 Commands:

Identifier	Name	Direction
0x0000	Reset to Factory Defaults	Receive

#### 4.1.2.1 Reset to Factory Defaults Command

On receipt of this command, the device resets all the attributes of all its clusters to their factory defaults.

Note that ZigBee networking functionality, bindings, groups, or other persistent data are not affected by this command.

## 4.2 Power Configuration Cluster

<b>Cluster Identifier</b>	<b>0x0001</b>
Supported as	Server

### 4.2.1 Commands

No supported commands.

### 4.2.2 Attributes

Identifier	Name	Default	Comment
0x20	Battery Voltage	-	Reportable
0x21	Battery percentage remaining	-	Reportable
0x31	Battery Size	0x08 (CR123A)	Read only



0x33	Battery Quantity	0x04	Read only
0x35	Battery Alarm Mask	0xFF	
0x36	Battery Voltage Min Threshold	0x46 (7,0V)	
0x37	Battery Voltage Threshold1	0x47 (7,1V)	
0x38	Battery Voltage Threshold2	0x49 (7,3V)	
0x39	Battery Voltage Threshold3	0x4C (7,6V)	
0x3A	Battery Percentage Min Threshold	0x00 (0%)	
0x3B	Battery Percentage Thredshold 1	0x02 (1%)	
0x3C	Battery Percentage Thredshold 2	0x08 (4%)	
0x3D	Battery Percentage Thredshold 3	0x10 (8%)	
0x3E	Battery Alarm State	0x00	Reportable
0xFFFD	Cluster Revision	0x01	

### Battery Voltage

The Battery Voltage attribute is 8 bits in length and specifies the current actual (measured) battery voltage, in units of 100mV.

### Battery Percentage Remaining

Specifies the remaining battery life as a half integer percentage of the full battery capacity (e.g., 34.5%, 45%, 68.5%, 90%) with a range between zero and 100%, with 0x00 = 0%, 0x64 = 50%, and 0xC8 = 100%.

## 4.3 Identify Cluster

<b>Cluster Identifier</b>	<b>0x0003</b>
Supported as	Server

The danalock will flash the LED once every two seconds when it is in identify mode.

### 4.3.1 Attributes

Identifier	Name	Default	Comment
0x00	Identify time	0x00	
0xFFFD	Cluster revision	0x01	

### 4.3.2 Commands:

Identifier	Name	Direction
0x00	Identify Command	Receive
0x01	Identify Query Command	Receive
0x00	Identify Query Response Command	Send

## 4.4 Alarms Cluster

<b>Cluster Identifier</b>	<b>0x0009</b>
Supported as	Server





#### 4.4.1 Attributes

Identifier	Name	Default	Comment
0x0001	Alarm count	0x0000	Always 0x0000
0xFFFD	Cluster revision	0x01	

#### 4.4.2 Commands:

Identifier	Name	Direction
0x00	Reset Alarm	Received
0x01	Reset all alarms	Received
0x02	Get Alarm	Received
0x00	Alarm	Generated
0x01	GetAlarmResponse	Generated

### 4.5 Time Cluster

The time is used by the log table. The lock asks for the time from the controller.

Cluster Identifier	0x000A
Supported as	Client

#### 4.5.1 Attributes

Identifier	Name	Default	Comment
0xFFFD	Cluster revision	0x01	

#### 4.5.2 Commands:

No Supported commands.

### 4.6 Over the Air Bootloading Cluster

The bootloader client poll the ota server every

Cluster Identifier	
Supported as	Client

#### 4.6.1 Attributes

Identifier	Name	Default	Comment
0x00	OTA Upgrade Server ID		
0x01	Offset(address) into the file		
0x02	OTA Current File Version	0x004E	
0x03	OTA Current Zigbee Stack Version	0x0002	(ZigBee Pro)
0x04	Ota Downloaded File Version		
0x05	OTA Downloaded Zigbee Stack version		
0x06	OTA Upgrade Status		
0x07	Manufacturer ID	0x115C	
0x08	Image Type ID	0x0004	
0x09	MinimumBlockPeriod		



0x0A	Image Stamp		
0xFFFD	Cluster revision	0x01	

Image Type ID: 0x04 DanalockV3 BTZB rev2

Firmware Version 0x01

#### 4.6.2 Commands:

Identifier	Name	Direction
0x00	ImageNotify	Receive
0x02	QueryNextImageResponse	Receive
0x05	ImageBlockResponse	Receive
0x07	UpgradeEndResponse	Receive
0x01	QueryNextImage Request	Generated
0x03	ImageBlockRequest	Generated
0x06	UpgradeEndRequest	Generated

## 4.7 Poll control Cluster

<b>Cluster Identifier</b>	<b>0x0020</b>
Supported as	Server

### 4.7.1 Attributes

Identifier	Name	Default	Comment
0x0000	Check-inInterval	0x3840 (1 hr.)	
0x0001	LongPoll Interval	0x14 (5 sec)	
0x0002	ShortPollInterval	0x02 (2 qs)	
0x0003	FastPollTimeout	0x28 (10 sec.)	
0x0004	Check-inIntervalMin	0x00003840 (1 hr.)	
0x0005	LongPollIntervalMin	0x00000004(1 sec)	
0x0006	FastPollTimeoutMax	0x003C (60 sec.)	
0xFFFD	Cluster revision	0x0001	

#### 4.7.1.1 LongPoll Interval

This variable contains the time between when the lock poll the gateway. It is highly recommended that this value is below 7,5 sec in order not to lose any packets. A short LongPoll interval will drain the battery very fast, so the default value is set to 5 sec.

The FastPollTimeout attribute represents the number of quarterseconds that an end device will stay in fast poll mode by default. It is suggested that the FastPollTimeout attribute value be greater than 7.68 seconds.

#### 4.7.2 Commands:

Identifier	Name	Direction
0x00	Check-in	Generated
0x00	Check-in Response	Received
0x01	Fast Poll Stop	Received
0x02	Set Long Poll Interval	Received
0x03	Set Short Poll Interval	Received



## 4.8 Door lock Cluster

<b>Cluster Identifier</b>	<b>0x0101</b>
Supported as	Server

### 4.8.1 Attributes

Identifier	Name	Default	Comment
0x0000	Lock state	0x02	Read and writeable
0x0001	Lock type	Always returns 0x00	Dead bolt
0x0002	Actuator enabled	Always returns 0x00	
0x0010	Num lock records supported	TBD	
0x0011	Num total users Supported	Always returns 0x00	
0x0012	Num PIN users supported	Always returns 0x00	
0x0013	Num FRID users supported	Always returns 0x00	
0x0014	Num weekday schedules supported	Always returns 0x00	
0x0015	Num yearday schedules supported	Always returns 0x00	
0x0016	Num holiday schedules supported	Always returns 0x00	
0x0017	MaxPINCodeLength	Always returns 0x00	
0x0018	MinPINCodeLength	Always returns 0x00	
0x0019	MaxRFIDCodeLength	Always returns 0x00	
0x001A	MinRFIDCodeLength	Always returns 0x00	
0x0020	Enable logging	True	
0x0022	LED Settings	0x02	
0x0023	Auto relock Time	0x00000000	
0x0025	OperatingMode	Always returns 0x00	Normal Mode
0x0026	SupportedOperatingModes	Always returns 0x01	Normal Mode support
0x0027	DefaultConfigurationRegister	Always returns 0xC0	Auto relock & LED
0x0028	EnableLocalProgramming	Always returns 0x00	
0x0030	WrongCodeEntryLimit	Always returns 0x00	
0x0031	UserCodeTemporaryDisableTime	Always returns 0x00	
0x0032	SendPINOverTheAir	Always returns TRUE	
0x0033	RequirePINforRFOperation	Always returns FALSE	
0x0034	Zigbee security level	0	
0x0040	Alarm mask	0xFFFF	
0x0042	RF operation event mask	0xFFFF	
0x0043	Manual operation event mask	0xFFFF	
0xFFFFD	Cluster revision	0x01	

#### 4.8.1.1 Actuator enabled

Always returns 0x00 Disabled, because the motor will only run for a short time.

#### 4.8.1.2 LED Settings

0x00 = LED Disable

0x01 => 0x02

=> 0x02 = LED Enable. Will Always return 0x02 if enabled.

#### 4.8.1.3 Alarm mask

Event Source	Operation Event Code	Attribute Bitmask	Event Description
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0x01	0x01	BIT(1)	Lock, source: RF
0x01	0x02	BIT(2)	Unlock, source: RF
0x02	0x01	BIT(1)	Lock, source: Manual
0x02	0x02	BIT(2)	Unlock, source: Manual
0x02	0x0A	BIT(6)	Auto lock, source: Manual

#### 4.8.2 Commands:

Identifier	Name	Direction
0x00	Lock Door	Received
0x01	Unlock Door	Received
0x04	Get Log Record	Received
0x00	Lock Door Response	Generated
0x01	Unlock Door Response	Generated
0x04	Get Log Record Response	Generated

#### 4.8.3 Extended manufacturer specific attributes

Identifier	Name	Type	Access	Default	Comments
0x0000	TwistAssist	bool	Read/Write	0	
0x0001	Blocked2Blocked	bool	Read/Write	0	
0x0002	HoldAndRelease	uint32	Read/Write	0	

#### 4.8.4 Extended manufacturer specific attribute and commands

Identifier	Name	Direction
0x00	Start Auto Calibration	Receive
0x01	Set Calibration Point	Receive
0x00	Start Auto Calibration Response	Generate
0x01	Set Calibration Point Response	Generate

### 4.9 Diagnostics Cluster

Cluster Identifier	0x0B05
Supported as	Server & Client

#### 4.9.1 Attributes

Identifier	Name	Default	Comment
0x0000	NumberOfResets		
0x011B	AverageMACRetryPerAPSMMessageSent		
0x011C	LastMessageLQI		
0x011D	LastMessageRSSI		
0xFFFD	Cluster revision	0x01	

#### 4.9.2 Commands

No commands are supported.



## 4.10 Danalock Cluster

### 4.10.1 Attributes

Cluster	Identifier	Name	Type	Default	Comments
0xFCFF	0x0000	DMI Product Number	INT32U	0x03	
0xFCFF	0x0001	Host Firmware Major Number	INT32U	0x00	
0xFCFF	0x0002	Host Firmware Minor Number	INT32U	0x09	
0xFCFF	0x0003	Host Firmware Revision Number	INT32U	0x01	
0xFCFF	0x0004	Host Hardware Major Number	INT32U	0x02	
0xFCFF	0x0005	Host Hardware Minor Number	INT32U	0x00	
0xFCFF	0x0006	Host Hardware Revision Number	INT32U	0x04	
0xFCFF	0x0007	Bluetooth On Host Enable	BOOL	TRUE	
0xFCFF	0x0008	CTUNE	INT32U	0xD0	

## 5 Controllers Action on Inclusion

Recommended actions for a controller to including the Danalock.

Bind on Alarm Cluster

Bind on Power Configuration Cluster

Bind on Door Lock Cluster