



Aeotec Dry Contact Sensor Gen5

(Z-Wave Dry Contact Sensor Gen5)



Change History

Revision	Date	Change Description
1	01/21/2015	Initial draft.
2	06/05/2015	Update
3	09/02/2015	Update
4	09/06/2015	Update

Aeotec Dry Contact Sensor Gen5 Engineering Specifications and Advanced Functions for Developers

Aeotec Dry Contact Sensor is a sensor binary device based on Z-Wave enhanced 232 slave library of V6.51.06.

From Aeotec by Aeotec' intelligence series and our Gen5 range, comes the Dry Contact Sensor. It is a fully functional Z-Wave® sensor that can detect a variety of dry contact signals, you just need to connect the matched external sensor on it, such as the water level sensor, dry contact switch, dry contact relay and so on. In other words, it can be used if the external sensor is a dry contact.

The Dry Contact Sensor is also a security Z-Wave device and supports the Over The Air (OTA) feature for the product's firmware upgrade.

Dry Contact Sensor Gen5 can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network. It also supports Security Command Class and has the AES 128 bit security encryption built right in, so a security enabled controller is needed for fully to utilize its function.

1. Library and Command Classes

1.1 SDK: 6.51.06

1.2 Library

- Basic Device Class: BASIC_TYPE_ROUTING_SLAVE
- Generic Device class: GENERIC_TYPE_SENSOR_NOTIFICATION
- Specific Device Class: SPECIFIC_TYPE_NOTIFICATION_SENSOR

1.3 Commands Class

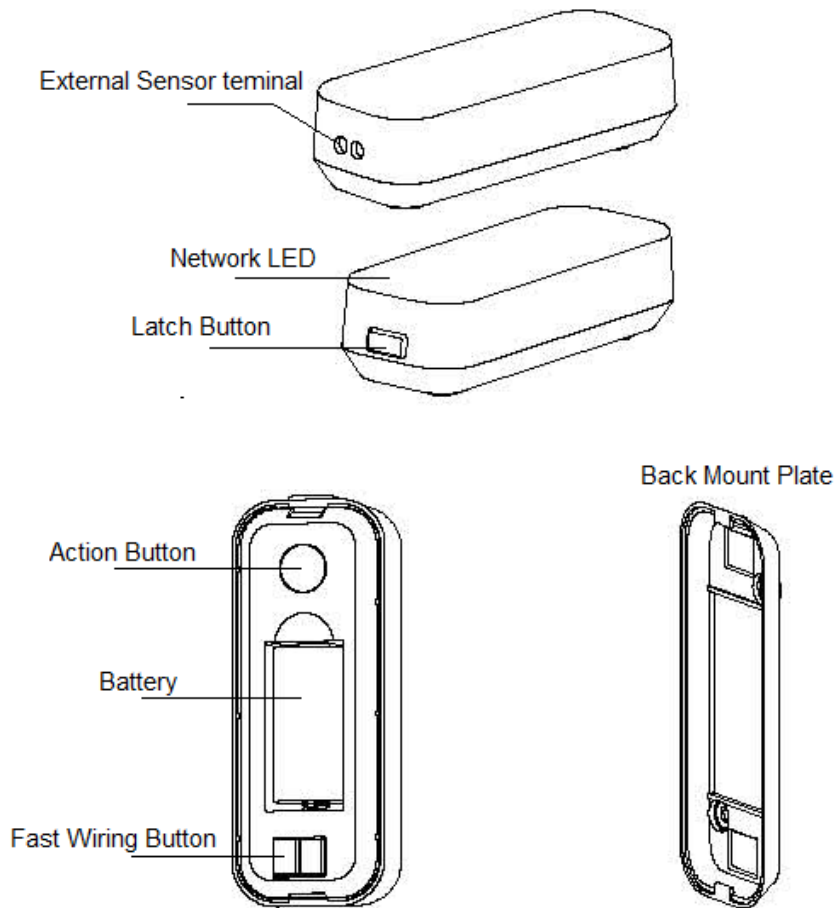
	Included Non-Secure	Included Secure
Node Info Frame	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_NOTIFICATION V3 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_BATTERY V1 COMMAND_CLASS_POWERLEVEL V1 COMMAND_CLASS_WAKE_UP V2 COMMAND_CLASS_BASIC COMMAND_CLASS_SENSOR_BINARY V1 COMMAND_CLASS_CONFIGURATION V1 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1
Security Command Supported Report Frame		COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_POWERLEVEL V1 COMMAND_CLASS_NOTIFICATION V3 COMMAND_CLASS_WAKE_UP V2 COMMAND_CLASS_BASIC COMMAND_CLASS_SENSOR_BINARY V1 COMMAND_CLASS_BATTERY V1 COMMAND_CLASS_CONFIGURATION V1

2. Technical Specifications

Operating Distance: Up to 492 feet (150 meters) outdoors.

3. Familiarize Yourself with Your Dry Contact Sensor Gen5

3.1 Interface



4. All Functions of Each Trigger

4.1 Functions of Z-Wave Button

Trigger	Description
Click the Action Button one time	<ol style="list-style-type: none"> 1. Send node info frame without security CC in node info list. 2. Add Dry Contact Sensor into Z-Wave Network: <ol style="list-style-type: none"> 1. Power on Dry Contact Sensor. 2. Let the primary controller into inclusion mode (If you don't know how to do this, please refer to its manual). 3. Press the Action Button. 4. If the adding is failed, please repeat the process from step 2.

	<p>3. Remove Dry Contact Sensor from Z-Wave Network:</p> <ol style="list-style-type: none"> 1. Power on Dry Contact Sensor. 2. Let the primary controller into exclusion mode (If you don't know how to do this, refer to its manual). 3. Press the Action Button. 4. If the removing is failed, please repeat the process from step 2. <p>Note: If Dry Contact Sensor is removed from Z-wave network, it will be reset to factory default.</p>
Click the Action Button 2 times with 1 seconds	<p>1. Send node info frame with security CC in node info list.</p> <p>2. Add Dry Contact Sensor into Z-Wave Network:</p> <ol style="list-style-type: none"> 1. Power on Dry Contact Sensor. 2. Let the primary controller into inclusion mode (If you don't know how to do this, please refer to its manual). 3. Press the Action Button 2 times. 4. If the adding is failed, please repeat the process from step 2. <p>3. Remove Dry Contact Sensor from Z-Wave Network:</p> <ol style="list-style-type: none"> 1. Power on Dry Contact Sensor. 2. Let the primary controller into exclusion mode (If you don't know how to do this, refer to its manual). 3. Press the Action Button 2 times. 4. If the removing is failed, please repeat the process from step 2. <p>Note: If Dry Contact Sensor is removed from Z-wave network, it will be reset to factory default.</p>
Press and hold Action Button for 3 seconds and then released	Toggle on/off 10 minutes wake-up state
Press and hold Action Button for 20 seconds and then released	<p>Reset Dry Contact Sensor to Factory Default:</p> <ol style="list-style-type: none"> 1. Make sure the Dry Contact Sensor is connected to the power supply. 2. If holding time more than one second, the Network LED will fast blink. If holding time more than 20seconds, Network LED will be on for 2 seconds, which indicates the reset operation is successful, otherwise please repeat from step1 to step2. <p>Note:</p> <ol style="list-style-type: none"> 1. This procedure should only be used when the primary controller is inoperable. 2. Reset Dry Contact Sensor to factory default settings will: <ol style="list-style-type: none"> a), remove Dry Contact Sensor from Z-Wave network state; b), delete the Association setting; c), restore the configuration settings to the default.
External Sensor triggers On/Off	Send Sensor Binary Report (configurable), Basic Set Command (configurable), Battery Report (configurable) or Notification Report.

The priority of destination node that Wake Up Notification will be sent to:

Destination nodes	Priority
The Node configured by Wake up Interval set command	Supreme
SIS or SUC Node	High
First Associated Node	Middle

Broadcast	Low
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5. Special Rule of Each Command

5.1 Z-Wave Plus Info Report Command Class

Parameter	Value
Z-Wave Plus Version	2 (ZWAVEPLUS_INFO_VERSION_V2)
Role Type	6 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_SLEEPING_REPORTING)
Node Type	0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x0C05 (ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_WATER_ALARM)
User Icon Type	0x0C05 (ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_WATER_ALARM)

5.2 Manufacturer Specific Report

Parameter	Value
Manufacturer ID 1	0x00
Manufacturer ID 2	0x86
Product Type ID 1	EU=0x00, US=0x01, AU=0x02
Product Type ID 2	0x02
Product ID 1	0x00
Product ID 2	0x61

5.3 Association Command Class

The Dry Contact Sensor supports 1 association group and can add Max 5 nodes in group 1.

Association Group	Nodes	Send Mode	Send commands
Group 1	0	N/A	N/A
	[1,5]	Single Cast	Send Sensor Binary Report (configurable in parameter 121) or Basic Set Command (configurable in parameter 121) or Notification Report Command when the Sensor is triggered.

5.4 Association Group Info Command Class

5.4.1 Association Group Info Report Command Class

Profile: General: NA (Profile MSB=0, Profile LSB=0)

5.4.2 Association Group Name Report Command Class

Group 1: Lifeline

5.5 Notification Command Class

Default Notification type and Event:

Notification Type: Access Control (0x06).

Notification Events: Window/Door is open (0x16). Window/Door is closed (0x17).

Other supported Notification types or Events can be configured via parameter 122.

5.6 Configuration Set Command Class

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_SET							
Parameter Number							
Default	Reserved					Size	
Configuration Value 1(MSB)							
Configuration Value 2							
.....							
Configuration Value n(LSB)							

Parameter Number Definitions (8 bit):

Parameter Number Hex / Decimal	Description	Default Value	Size
0x01 (1)	Which value of the Sensor Binary Report will be sent when the Sensor is triggered On/Off. 1, Value=0, On=Sensor Binary Report 0xFF, Off=Sensor Binary Report 0x00. 2, Value=1, On= Sensor Binary Report 0x00, Off= Sensor Binary Report 0xFF.	0	1
0x02 (2)	Enable/disable wake-up 10 minutes when re-power on the Sensor. (0=disable, 1=enable)	1	1
0x03 (3)	Which value of the Basic Set will be sent when the Sensor is triggered On/Off.. 1, Value=0, On= Basic Set 0xFF, Off=Basic Set 0x00. 2, Value=1, On=Basic Set 0x00, Off = Basic Set 0xFF.	0	1
0x27 (39)	Set the low battery value. (10% to 50%)	10	1
0x6F (111)	Set the interval time of battery report. Value=0, disable the battery report for a interval time. Value=1 to 0x7FFFFFFF, the interval time of battery report is set. Note: 1, if the value is less than 10, the time unit is second. If the value is more than 10, the time unit is 4 minutes, which means if the value is more than 10 and less than 240, the interval time is 4 minutes. If the value is more than 240 and less than 480, the interval is 8 minutes. 2, if the current battery report falls below the low battery value (configurable parameter 39), it will send battery report=0xFF.	0	4
0x79 (121)	To configure which sensor report will be sent when the Sensor is triggered On/Off.	0x00000100	4

0x7A (122)	Set a Notification type for Dry Contact Sensor. Value: 1 to 11, correspond to Notification type 1 to 10. See the below table.	6	1
0xFF (255)	1, Value=0x55555555、Default=1、Size=4 Reset to factory default setting and removed from the z-wave network	N/A	4
	2, Value=0、Default=1、Size=1 Reset to all settings to default value.	N/A	1

Parameter number equals 121:

	7	6	5	4	3	2	1	0
Configuration Value 1(MSB)	Reserved							
Configuration Value 2	Reserved							
Configuration Value 3	Reserved							Basic Set
Configuration Value 4(LSB)	Reserved	Reserved	Reserved	Sensor Binary	Reserved	Reserved	Reserved	Reserved

Example:

Configure the Dry Contact Sensor to send Sensor Binary report to controller when the Sensor is triggered:

1), Set the association to node 1(controller).

ZW_SendData(0x85, 0x01, 0x01, 0x01); // Association Set

2), Set the parameter 121 to 0x00000010.

ZW_SendData(0x79, 0x04, 0x00, 0x00, 0x00, 0x10); //Configuration Set

Parameter number equals 122:

Value	Notification Type (8 bit)	Event (8 bit)	Sensor state	Event Parameter(s) (N Byte)
1	Smoke Alarm 0x01	Smoke detected Unknown Location 0x02	Sensor ON is triggered	N/A
2	CO Alarm 0x02	Carbon monoxide detected, Unknown Location 0x02	Sensor ON is triggered	N/A
3	CO2 Alarm 0x03	Carbon dioxide detected, Unknown Location 0x02	Sensor ON is triggered	N/A
4	Heat Alarm 0x04	Overheat detected, Unknown Location 0x02	Sensor ON is triggered	N/A
5	Water Alarm 0x05	Water Leak detected, Unknown Location 0x02	Sensor ON is triggered	N/A
		Water Level Dropped, Unknown Location 0x04	Sensor OFF is triggered	N/A

6	Access Control	0x06	Window/Door is open (V3)	0x16	Sensor OFF is triggered	N/A
			Window/Door is closed (V3)	0x17	Sensor ON is triggered	N/A
7	Home Security	0x07	Intrusion, Unknown Location	0x02	Sensor ON is triggered	N/A
8	Power Management	0x08	AC mains disconnected	0x02	Sensor OFF is triggered	N/A
			AC mains re-connected	0x03	Sensor ON is triggered	N/A
9	System	0x09	System hardware failure	0x01	Sensor ON is triggered	N/A
10	Emergency Alarm	0x0A	Contact Fire Service	0x02	Sensor ON is triggered	N/A
11	Clock	0x0B	Timer Ended (V3)	0x02	Sensor ON is triggered	N/A