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Connecting technology with life.

Smart Siren

- SIRZB-110

Technical manual

Revised 29.08.2025

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RoHS CE

1 Cautionary notes

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2 Features

2.1 Smart Siren - SIRZB-110

Expand your security system with a combined siren, voice prompt, and range extender.

The Zigbee-based Smart Siren has several functionalities. Firstly, the siren can emit a loud sound, making it suitable for security purposes. If intruders, burglars, or other unwanted guests enter your customer's property, the siren emits a ~3 kHz alarm sound (90 dB @ 1 m) and sends a notification to the smart home system.

Key features are:

- Siren with alarm sound
- Voice prompt with up to 50 sound clips
- Range extender for Zigbee networks with battery backup
- Power Failure alarm
- Tamper-protected
- ZigBee OTA cluster for firmware upgrades

Voice prompt communication with the user

The Smart Siren includes a voice prompt. You can either decide what you wish the voice prompt to say or you can let your customers decide. The Smart Siren has capacity for 6 minutes of sound distributed over 50 sound clips. You can record standard messages for the speaker to play in certain scenarios, such as "alarm", "fire" and "motion" in combination with areas like "kitchen", "living room" and "bedroom". For instance, you can program the voice prompt to say, "alarm activated in living room" or "fire detected in kitchen".

Range extender with battery backup

The Smart Siren also features a range extender functionality that can strengthen Zigbee communication between devices and the gateway, for instance, if devices are placed far from the gateway and the signal is weak. The Smart Siren has a battery backup, so it will still be able to communicate in case of a power cut. The device includes a tamper switch that detects opening of the unit, making it suitable for alarm systems.

3 Endpoints

The device has 3 endpoints:

3.1 ZigBee Device Object (ZDO)

- Application profile Id 0x0000
- Application device Id 0x0000
- Supports all mandatory clusters

3.2 Smart Siren – End Point 0x2B

- Application profile Id 0x0104 (Home Automation)
- Application device Id 0x0403 (IAS Warning Device)
- Clusters
    - Clusters supported as server
        - Basic
        - Identify
        - IAS Zone
        - IAS WD
        - Power Configuration
    - Clusters supported as client
        - OTA Upgrade
        - Time

3.3 Onics Utility

- Application profile Id 0xC0C9 (Onics (Formerly Develco Products) private profile)
- Application device Id 0x0001
- ZigBee Manufacturer code is 0x1015
- Private profile for internal Onics (Formerly Develco Products) use only.

4 Supported Clusters

4.1 Basic – Cluster id 0x0000

The Basic cluster has 2 attribute sets defined. In the following sections the attributes of these sets is listed.

Only the first set has mandatory attributes, also the optional attributes that can be relevant to a device are all in set 0x000

4.1.1 0x000 Basic Device Information attribute set

Id#	Name	Type	Range	Man/Opt	Relevance and ref.
0x00	ZCLVersion	Uint8	Type range	M	
0x04	ManufacturerName	String	0-32 byte	O	
0x05	ModelIdentifier	String	0-32 byte	O	
0x06	DataCode	String	0-16 byte	O	
0x07	PowerSource	8 bit enum	Type range	M	

4.1.1.1 Manufacturer name

“frient A/S” or “Develco Products A/S” – depending on the product version.

4.1.1.2 Model identifier

“SIRZB-110”

4.1.1.3 Power source

Mains powered single phase

4.1.1.4 Manufacture Specific Attribute

Id#	Name	Type	Relevance and ref.
0x8000	Primary SW Version	OctetString	Read only
0x8010	Primary Bootloader SW Version	OctetString	Read only
0x8020	Primary HW version	OctetString	Read only

0x8030	Primary HW name	OctetString	Read only
0x8050	Primary SW Version 3rd Party	OctetString	Read only

ZCL header setting – Manufacturer code for Onics (Formerly Develco Products) is 0x1015

4.2 Identify – Cluster id 0x0003

The identify cluster serves as a way to make a device identify itself either visually or by sound.
Normally this is done by toggling an LED at some interval.
The Identify cluster only defines one attribute.

4.2.1 Attribute

Id#	Name	Type	Range	Man/Opt	Relevance and ref.
0x0000	IdentifyTime	Uint16	Type range	M	

4.2.1.1 Commands

The identify cluster has 2 commands as server.

Id#	Name	Payload	Man/Opt	Relevance and ref.
0x00	Identify	Uint16 - Identify Time (seconds)	M	
0x01	Identify Query	None	M	

The identify cluster has 1 command as client.

Id#	Name	Payload	Man/Opt	Relevance and ref.
0x00	Identify Query Response	Uint16 - Identify Time (seconds)	M	

4.2.2 IAS WD – Cluster id 0x0502

The IAS WD cluster is described in ZigBee Cluster Library Specification.
Using this cluster, a ZigBee device can access a ZigBee enabled IAS WD device and issue different alarm warning indications when a system alarm condition is detected.

4.2.2.1 Attribute

Id#	Name	Type	Range	Man/Opt	Relevance and ref.
0x0000	*MaxDuration*	Uint16	Type range	M	Default is 240 sec

The *MaxDuration* attribute specifies the maximum time in seconds that the siren will sound continuously, regardless of start/stop commands.

4.2.2.2 Commands

The IAS WD cluster has 2 command as server.

Id#	Name	Man/Opt	Relevance and ref.
0x00	*Start warning*	M	
0x01	*Squawk*	M	

4.2.2.2.1 Command - Start warning

This command starts the WD operation. The WD alerts the surrounding area by audible (siren).

The *Start Warning* command payload shall be formatted as illustrated

Bits	4	2	2	16	8	8
Data Type	Map8			Uint16	Unit8	Unit8
Field Name	Warning mode	NA	Siren level	Warning Duration	NA	NA

4.2.2.2.1.1 Warning Mode file

The following warning modes are supported

Warning mode	Meaning
0	Stop (no warning)

1	Burglar
2	Fire
3	Emergency
4	Panic
5	Panic Fire
6	Panic Emergency

4.2.2.2.1.2 Siren Level

The following levels are supported

Warning mode	Meaning
0	Low level
1	Medium level
2	High level
3	Very high

4.2.2.2.1.3 Warning duration field

Requested duration of warning, in seconds. If both Strobe and Warning Mode are "0" this field is ignored

4.2.2.2.2 Command - Squawk

This command uses the WD capabilities to emit a quick audible/visible pulse called a "squawk".
The *Start Squawk* command payload shall be formatted as illustrated

Bits	4	1	1	2
Data Type	Map8			
Field Name	Squawk mode	NA	Reserved	Squawk level

4.2.2.2.2.1 Squawk mode filed

The following modes are supported

Warning mode	Meaning
0	Notification sound for “System is armed”
1	Notification sound for “System is disarmed”

4.2.2.2.2.2 Squawk Level field

The following Squawk levels are supported

Warning mode	Meaning
0	Low level
1	Medium level
2	High level
3	Very high

4.3 IAS Zone Device – EP 0x23

4.3.1 IAS Zone - Cluster id 0x0500

The IAS Zone cluster is described in ZigBee Cluster Library Specification.

4.3.1.1 Attribute

Id#	Name	Type	Man/Opt	Relevance and ref.
0x0000	Zone State	8-bit Enumeration	M	
0x0001	Zone Type	16-bit Enumeration	M	Hard coded to 0x0225 Standard Warning Device
0x0002	Zone Status	Uint16	M	The following bits are supported: Bit0: Alarm 1 Bit2: Tamper Bit3: Battery (1-2 hours left) Bit4: Supervision reports Bit5: Restore reports Bit7: AC (Mains) Bit8: Test
0x0010	IAS CIE Address	Valid 64-bit IEEE address	M	IEEE address of the siren
0x0011	ZoneID	Uint8	M	

4.3.1.1.1 Zone State

The device will automatically start to scan the network for an IAS Zone client in a predefine interval. When the client is found it will automatically attempt to enrol. When it has successfully enrolled the Zone Status command is send every 5 minutes.

The attribute value will change from not enrolled (0x00) to Enrolled (0x01)

4.3.1.1.2 IAS CIE Address

Attribute specifies the address that commands generated by the server shall be sent to.

To un-enroll the device the back end system has to write a new address into this attribute. Any value is valid. If the back end system writes an IEEE adr then it will try to enrol to this devices represented by the IEEE adr.

4.3.1.1.3 ZoneID

A unique reference number allocated by the CIE at zone enrollment time.
Used by IAS devices to reference specific zones when communicating with the CIE. The *ZoneID* of each zone stays fixed until that zone is unenrolled

4.3.1.2 Commands

The IAS Zone cluster has 2 commands as server.

<table>
<tr><th>Id#</th><th>Name</th><th colspan="3">Payload</th><th>Man/Opt</th><th>Relevance and ref.</th></tr>
<tr><td>0x00</td><td>Zone Status Change Notification</td><td colspan="3">Uint16 – bit mask</td><td>M</td><td>The status is report to the coordinator every 5 min</td></tr>
<tr><td rowspan="3">0x01</td><td rowspan="3">Zone Enroll Request</td><td>Bits</td><td>16</td><td>16</td><td rowspan="3">M</td><td rowspan="3"></td></tr>
<tr><td>Data type</td><td>16 bit enum</td><td>UINT16</td></tr>
<tr><td>Field name</td><td>Zone type</td><td>Manufacturer code</td></tr>
</table>

Init sequence – when the device has join the network it start to scan for an IAS zone client cluster. If a client is found a Zone enroll request command is send and a Zone Enroll response is expected. If it doesn't receive a response within 15 sec it gives up and will continue to scan x number of

attempts. When the init sequence is over it will enter a state where it scans for a client every 12 hour.

The following bits are supported in Zone status:

Bit0: Alarm 1

Bit2: Tamper

Bit3: Battery, When the battery has 1-2 hours left. Battery bit is set high and "Zone Status" is transmitted to the coordinator.

Bit4: Supervision reports

Bit5: Restore reports

Bit7: AC (Mains)

Bit8: Test

Bit0,

Note: How to clear a alarm in the "Zone status"

The device requests ZCL Default Response on the Zone Status Change notification, if any new Alarm bit has been set. Until the IAS CIE has acknowledged the received alarm by sending the mandated Default Response, the Alarm bits are not cleared – even if there is no longer an alarm situation. When the Default Response is received, a new Zone Status Change notification is sent with the Alarm bits cleared, if the alarm situation has disappeared since sending the Zone Status message with alarm set.

4.4 Time – Cluster id 0x000A

The Time cluster is a general cluster for time it is based on a UTC time in seconds since 0 hrs 0 mins 0 sec on 1st January 2000.

The metering device will use this clusters as a client – provided that a suitable Time Server is available on the network (most likely on the Gateway/concentrator)

4.4.1 Attribute

Id#	Name	Type	Range	Man /Opt	Relevance and ref.
0x0000	Time	UTCTime (Uint32)	Type range	M	The module will periodically update its clock by synchronizing through this cluster
0x0001	TimeStatus	8 bit bitmap	00000xxx	M	
0x0002	TimeZone	Uint32	Type range	O	
0x0003	DstStart	Uint32	Type range	O	
0x0004	DstEnd	Int32	Type range	O	
0x0005	DstShift	Uint32	Type range	O	

4.4.2 Power Configuration - Cluster id 0x0001

The power configuration cluster is described in ZigBee Cluster Library Specification.

4.4.2.1 Attribute

Id#	Name	Type	Range	Man/Opt	Relevance and ref.
0x0020	BatteryVoltage	Uint8	0x00 - 0xFF	O	ZCL configure reporting is supported
0x0034	BatteryRatedVoltage	Uint8	30	O	Unit is in 100 mV

Note: The attribute "*BatteryVoltage*" is measuring the battery voltage, in units of 100mV.

4.5 OTA Upgrade – Cluster id 0x0019

The cluster provides a ZigBee standard way to upgrade devices in the network via OTA messages.

4.5.1 OTA Cluster Attributes

Id#	Name	Type	Range	Man /Opt	Relevance and ref.
0x0000	UpgradeServerID	IEEE Address	-	M	
0x0001	FileOffset	Uint32	Type range	O	
0x0002	CurrentFileVersion	Uint32	Type range	O	
0x0003	CurrentZigBeeStackVersion	Uint16	Type range	O	
0x0004	DownloadedFileVersion	Uint32	Type range	O	
0x0005	DownloadedZigBeeStackVersion	Uint16	Type range	M	
0x0006	ImageUpgradeStatus	8 bit enum	0x00 to 0xFF	O	
0x0007	Manufacturer ID	Uint16	Type range	O	
0x0008	Image Type ID	Uint16	Type range	O	
0x0009	MinimumBlockRequestDelay	Uint16	Type range	O	

Above attribute description is to be found in section 6.7 “OTA Cluster Attributes” in ZigBee document – “Zigbee Cluster Library OTA Cluster (0x0019) Test Specification” provided by the Connectivity Standards Alliance.

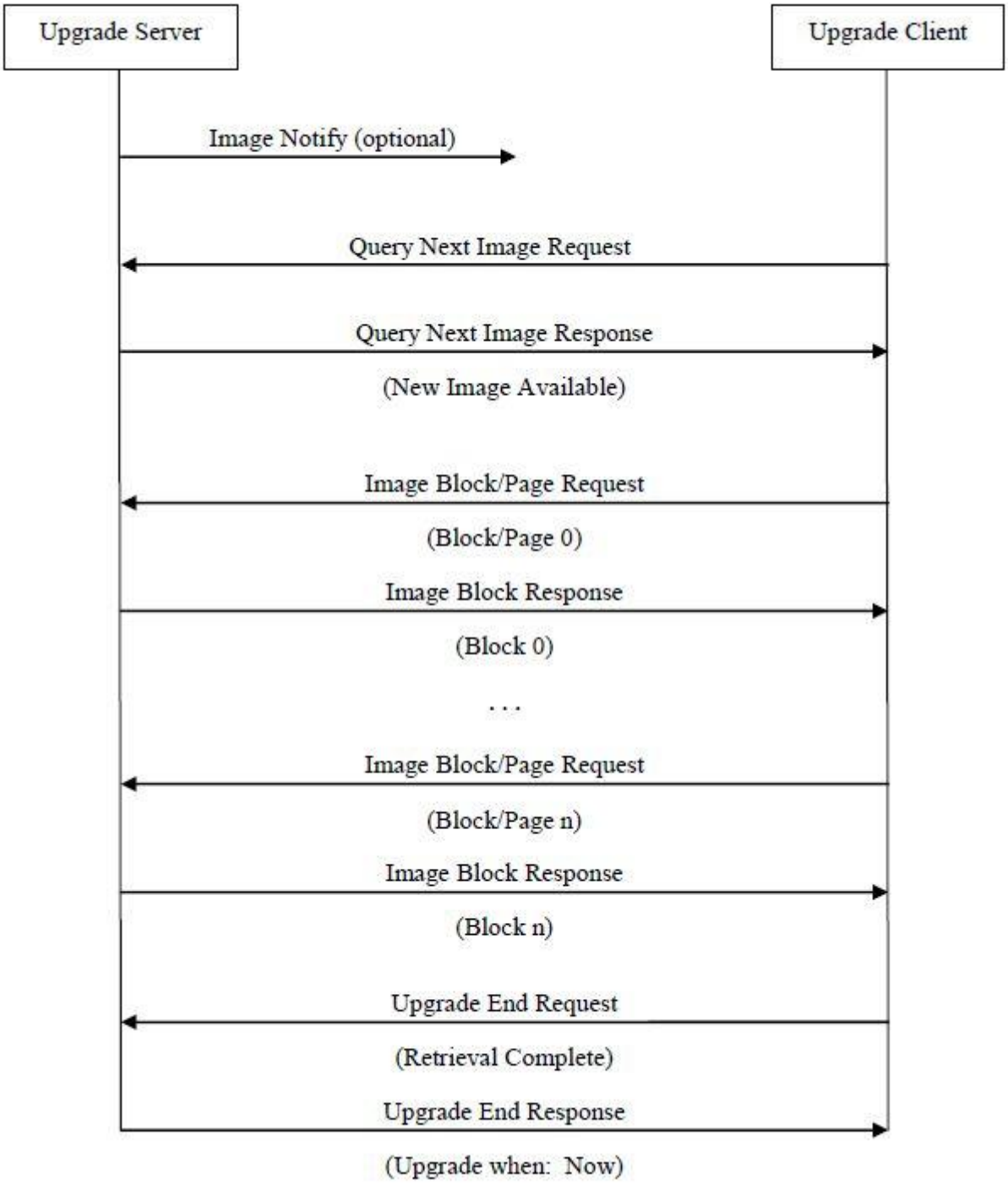
4.5.2 OTA Cluster Commands

The OTA Client cluster can send the following commands

Id#	Name	Man /Opt	Relevance and ref.
0x01	Query Next Image request	M	6.10.1 OTA Cluster Command Identifiers
0x03	Image Block Request	M	6.10.1 OTA Cluster Command Identifiers
0x06	Upgrade End Request	M	6.10.1 OTA Cluster Command Identifiers

4.5.3 OTA Upgrade Diagram

OTA Upgrade Message Diagram

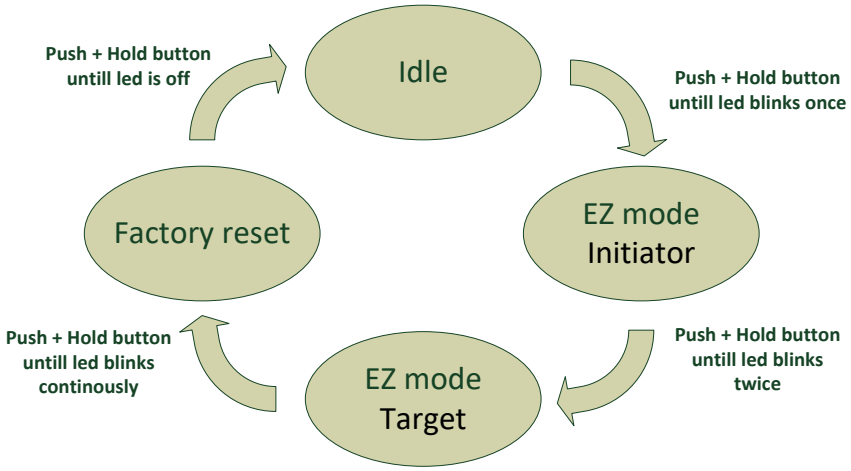


5 MMI user guide

5.1 Push button menu

Pushing the button on a device provides the user with several possibilities.

Pushing the button for longer (push, hold for a few seconds, and release) allows the user to set the device into a desired mode. A mode change happens at 5 second interval. Below, these modes are illustrated in a state chart.



When cycling through the menu modes, the state is indicated by a number of 100ms blinks on the LED. The device is supporting the ZigBee standardized EZ- mode Commissioning.

5.1.1 EZ mode – Initiator

If the device is not on the network EZ-Mode Network Steering is invoked when the user enters this menu. The led blinks once every 1 sec until the devices has joined the network. If the device was already on the network, it will broadcast the PermitJoin messages. It is the trust center policy that decides if the device can join the network.

When the device has joined the network EZ-Mode Finding and Binding is invoked, and the device start to blink every 3 sec until a cluster match is found. When a match is found, or the cluster examine is finished the blinking stops and the device sends a messages to the target device to stop the identify time.

The following clusters are support in EZ-mode finding and binding:

- No clusters supported

The EZ-mode time is hard coded to 3 minutes. This is the Minimum and recommended PermitJoin time broadcast for EZ-Mode Network Steering and minimum IdentifyTime set for EZ-Mode Finding and Binding. If the user enters the menu again another 3 minutes is started.

5.1.2 EZ mode – Target

If the devices are not on the network EZ-Mode Network Steering is invoked when the user enter this menu. The led blinks twice every 1 sec until the devices has joined the network. If the device was already on the network, it will broadcast the PermitJoin messages. It is the trust center policy that decides if the device can join the network.

When the device has joined the network identify mode is invoke and the device start to blink twice every 3 sec until identify mode is stopped or after the EZ-mode time has expired. If the user enters the menu again another 3 minutes is started.

5.1.3 Factory reset

To allow a device to join a network, one either has to power up a device that has not previously joined a network or push the button until the Reset To Factory default mode is indicated – and subsequently release the button. This will cause the device to reset to its factory default state and scan for a suitable coordinator.

5.2 Action on Power On

As a general rule, all end devices and routers that have not previously joined a network (or have been reset to factory default) will start up and search for a network with join permit open. In this mode, the LED will flash once every second.

Once the device has joined the network, is will start scanning for an OTA server and Time server.

If a device has joined a network and is powered down, it will attempt to rejoin this network upon power up.

6 General network behaviour

6.1 Installation

When the device is virgin and powered for the first time it will start looking for a ZigBee PAN Coordinator or router to join. The device continually scans each ZigBee channel starting from 11 to 24. The LED will flash once every second until it joins a device.
In section 5 “MMI” it is explained how to put the device into a join or leave network mode.
Network settings are stored in NV-memory are after a power cycle the device re-join the same network.
If the device has to join a new PAN coordinator the MMI menu supports a “Join / Leave” mode.

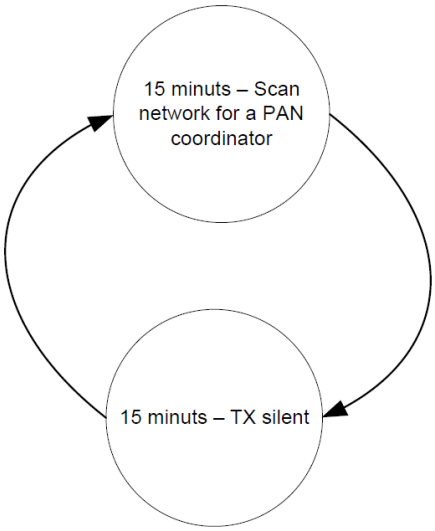
6.2 Normal – Keep alive

The device is sending a “keep alive” message to the PAN coordinator every 15 minutes to verify that the device is still connected to the network.

6.2.1 Network lost

If no “keep alive” responses are received 5 times in a row (1 hour and 15 minutes), the devices will start scanning every ZigBee channel for the PAN coordinator and try to re-join it. The LED will flash once every second until it re-joins the network.

According to the ZigBee specification TX is NOT allowed to be enabled all the time and a TX silent period has to be defined.



7 Specifications

7.1 General

Dimensions	Ø 119 x 49 x 23 mm
Colour	White
Power supply	230V
Power consumption,	0.4W
IP-class	20
Storage temperature	-20°C to +80°C
Operation temperature	0 to +50°C
Supply voltage	207 to 253 VAC
Sensitivity	-100 dBm @ 1% PER
Output power	+12 dBm
Frequency band	47 to 53 Hz
Siren	3.2 kHz - 90 dBm distance 1m
Voice prompt	50 sound clips
Voice Quality	Smart Phone Speaker
Range Extension	ZigBee Router supporting MESH

8 Contact Information

Technical support: Please contact Onics for support.
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