ESIM4
ESIM4 Q

Battery Powered GSM Auto Dialler/
Mini Alarm System

User Manual v1.4
Valid for ESIM4 v02.01.00 and up.

SAFETY INSTRUCTIONS

Please read and follow these safety guidelines in order to maintain safety of operators and people around:

- Battery powered GSM auto dialler/mini alarm system ESIM4/ESIM4 Q (later referenced as "the system", "the device" or "ESIM4") is equipped with a radio transceiver operating in GSM900/1800 bands / GSM850/900/1800/1900 bands respectively.
- DO NOT use the system where it can cause potential danger and interfere with other devices – such as medical devices.
- DO NOT use the system in hazardous environment.
- DO NOT expose the system to high humidity, chemical environment or mechanical impact.
- DO NOT attempt to repair the system yourself – any repairs must be carried out by fully qualified personnel only.

⚠ ESIM4 is a device that must be installed in limited access areas. Any system repairs must be done only by qualified, safety aware personnel.

⚠ Remove all batteries before installing. Never install or carry out maintenance during stormy weather.

⚠ The system must be powered by four 1,5 V lithium AA type batteries only. When inserting the batteries into the battery slots, mind the polarity terminals! Any additional device you connect to the system, such as a computer, must be powered by an EN 60950-1 approved supply.

⚠ To switch the system off, remove all four 1,5 V lithium AA type batteries.

⚠ Fuse F1 model – miniSMDC 0,5A. Replacement fuses have to be exactly the same as indicated by the manufacturer.

⚠ If you use a computer for the device configuration, it must be earthed.

The WEEE (Waste electricalal and Electronic Equipment) symbol on this product (see left) means it must not be disposed of in household waste. To prevent possible harm to human health and/or the environment, you must dispose of this product in an approved and environmentally safe recycling facility. For further information contact your system supplier, or your local waste authority.

CONTENTS

Limited Liability

The buyer agrees that the system will reduce the risk of fire, theft, burglary or other danger but that it does not guarantee against the occurrence of such events. "ELDES UAB" will not take any responsibility for the loss of personal effects, property or revenue whilst using the system. The liability of "ELDES UAB" is limited to the value of the system purchased. "ELDES UAB" is not affiliated with any mobile/wireless/cellular provider and is therefore not responsible for the quality of such services.

Manufacturer Warranty

The system carries a 24-month manufacturer warranty from "ELDES UAB". The warranty begins the day the system is purchased by the user and the receipt must be retained as proof of purchase date. The warranty remains valid only if the system is used as intended, following all guidelines outlined in this manual and in accordance with the operating conditions specified. The warranty is void if the system has been exposed to mechanical impact, chemicals, high humidity, fluids, corrosive and hazardous environments or force majeure factors.

Dear Customer,

Thank you for choosing to purchase the battery powered GSM dialler ESIM4. Your thoughtful decision will ensure reliable solution for many years as all ELDES products are manufactured to meet the highest standards.

We are confident that you will be completely satisfied with your product. However, in the unlikely event that you do experience a problem, please contact the dealer from whom you made your purchase.

Contents of Pack

Item	Quantity
ESIM4	1
User manual	1
1,5 V Lithium AA batteries	4
GSM antenna	1
Plastic gland	1
Screws	2
Terminal block	1

Not included:

- SIM card – we recommend you get a contract SIM, not Pay As You Go.
- miniUSB cable - can be obtained from your local distributor.
- Temperature sensor - can be obtained from your local distributor.
- Microphone - can be obtained from your local distributor
- iButton key reader- can be obtained from your local distributor
- iButton keys - can be obtained from your local distributor
- Buzzer - can be obtained from your local distributor

1. GENERAL INFORMATION

ESIM4 is a micro-controller based device used to inform users about the alarm in automatic or security systems, supply power to an auxiliary device and control one electrical appliance or measure temperature.

Examples of using the system:

- Suitable in areas without a 230V power supply.
- Switching one electronic device ON/OFF.
- Notification of failure or restoration of an electronic device via SMS text message and/or phone call.
- Property security.
- Temperature monitoring.
- Lighting, garden watering, water pump and other electrical equipment control via SMS text messages.
- Remote listening to what is happening in the secured area.

Main features:

- Configuration by SMS text message and PC.
- Sleep mode for battery power saving for up to 2 years.
- Up to 10 users for system configuration, control and acceptance of system event notifications by SMS text messages and phone calls.
- 2 inputs on board turning to 4 inputs when ATZ mode enabled.
- Inputs Z1-Z4 customizable to NC or NO.
- Input Z1/Z3 modes: digital or analog.
- 1 AUX output operating in accordance with the set up period.
- Input Z2/Z4 modes: digital, temperature sensor or iButton key.
- Up to 8 temperature sensors support for temperature monitoring in different areas.
- 1 open-collector output for electrical appliance control.
- Built-in shock sensor for alarm/restore notification by SMS text message on vibration detection.
- Scheduled system operation in Wake-Up mode and on system event.
- Scheduled input alarm/restore notifications.
- Periodic self-test notification by SMS text message to user phone number.
- Customizable notification texts.
- QR code generator allowing to arrange a single or multiple text commands in a single SMS text message and encrypt it in a QR code.

2. TECHNICAL SPECIFICATIONS

2.1. Electrical and Mechanical Characteristics

Battery type	1.5 V Lithium AA type batteries
Number of batteries	4
Current used in Sleep mode	30µA max
GSM modem frequency	ESIM4 - 900/1800 Mhz; ESIM4 Q - 850/900/1800/1900 MHz
Number of inputs	2
Digital input value range	0... 3000 mV
Analog input value range	0... 24mA
Impulse duration	>600ms
Number of auxiliary terminals	1
Auxiliary output values	12V ⎓ 200mA max
Maximum supported number of temperature sensors	8
Number of outputs	1
Output circuit	Open collector output. Output is pulled to COM when enabled.
Output current	200mA max
Supported temperature sensor model	Maxim®/Dallas® DS18S20, DS18B20
Dimensions	115x90x56 mm
Enclosure rating	IP 65
Operating temperature range	-20...+50 °C (-30...+55 °C with limitations)
Humidity	0-90% RH @ 0...+40 °C (non-condensing)
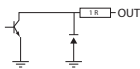
NOTE: We recommend using Camelion P7 lithium 1.5V AA type and Energizer Ultimate lithium 1.5V AA type batteries or other "ELDES UAB" recommended batteries.

ATTENTON: All 4 batteries must be of the same manufacturer.

2.2. Main Unit and LED and Connector Functionality
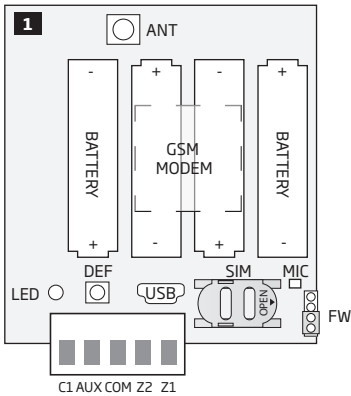
Main Unit Functionality

GSM MODEM	GSM network 900/1800 MHz modem
SIM	SIM card slot
LED	Light-emitting diode indicator
ANT	GSM antenna
MIC	Microphone
USB	Mini USB port
DEF	Button for restoring default settings
FW	Pins for firmware upgrade

Connectors	Description
Z1	Digital input / analog input terminal
Z2	Digital input / temperature sensor or iButton data terminal (DATA)
COM	Common terminal
AUX	Auxiliary power supply terminal
C1	Open-collector output / temperature sensor or buzzer power supply positive terminal (+4V)

LED indications	Description
1 flash every 0.5 sec.	SIM card is not present / PIN code enabled
3 quick flashes every 3 sec.	Searching for GSM network
1 flash every 5 sec	Connected to GSM network / system operating successfully
1 quick weak flash every 10 sec.	The device is operating in Sleep mode

2.3. Wiring Diagrams
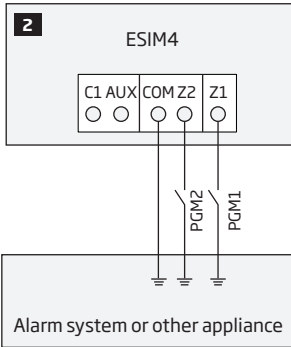
General wiring
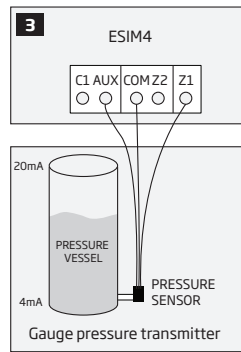
AUX wiring
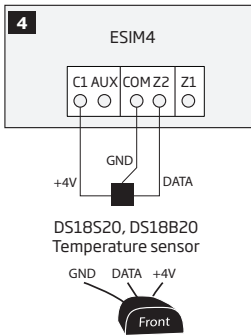
Temperature sensor wiring
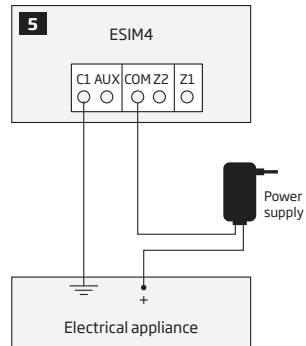
Output wiring
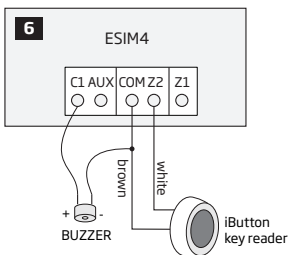
iButton key reader and buzzer wiring
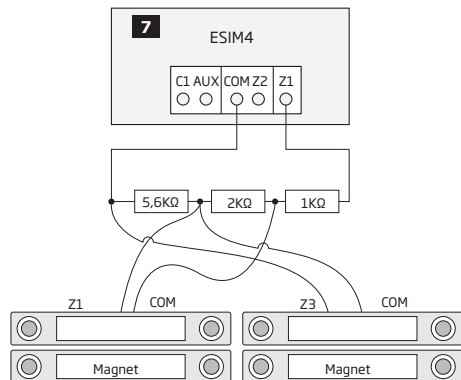
Example of input wiring in ATZ mode

3. INSTALLATION

For the connection of input/output terminals, use 0.50 mm²1 thread unshielded cable of up to 100 meters length.

1. Wire up the system in accordance with the wiring diagrams (see **2.3 Wiring Diagrams** for more details).

2. If necessary to run the wires, drill out a hole of 13 mm diameter in the ESIM4 enclosure and insert the plastic gland supplied in ESIM4 package. The plastic gland must be facing down.
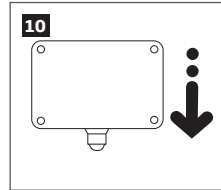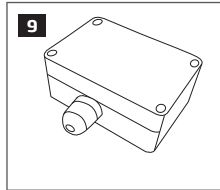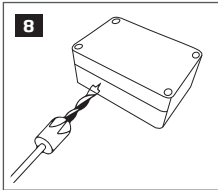
3. The system comes with a GSM antenna that is already connected. If another type of GSM antenna is required, please replace the standard GSM antenna with an antenna of your choice.

4. When placing the system, follow the recommendations:
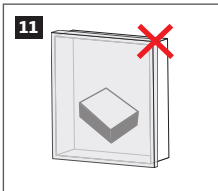
Never install in the following locations:

- inside the metal cabinet

- closer than 20 cm from the metal surface and/or power lines

5. Disable the PIN code request of the SIM card by inserting it into a mobile phone and following the proper menu steps.

6. Once the PIN code is disabled, insert the SIM card into the SIM card slot / holder of ESIM4 system.
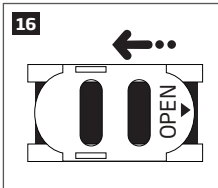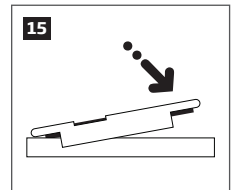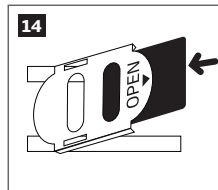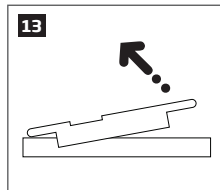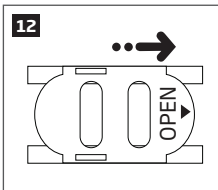
7. Insert all 4 batteries and wait until the LED indicator starts blinking indicating successful micro-controller operation. The system is now running in Wake-Up mode for 3 minutes to configure the system by SMS text messages (see **5. CONFIGURATION METHODS).**

8. Change the default SMS password (see **6. SMS PASSWORD** for more details).

9. Set the phone number for User 1 (see **7. USER PHONE NUMBERS** for more details).

10. Once the LED indicator lights OFF, the system will switch to Sleep mode and it will no longer accept any SMS text messages.

ATTENTION: The system is NOT compatible with pure 3G SIM cards. Only 2G/GSM SIM cards and 3G SIM cards with 2G/GSM profile enabled are supported. For more details, please contact your GSM operator.

ATTENTION: We also recommend you to disable call forwarding, voice mail/text message reports on missed/busy calls and similar services that might cause incorrect system operation. Please contact your GSM operator for more details on these services and how to disable them.

NOTE: For maximum system reliability we recommend you do NOT use a Pay As You Go SIM card. Otherwise, in the event of insufficient credit balance on the SIM card, the system would fail to make a phone call or send SMS text messages.

NOTE: We advise you to choose the same GSM SIM provider for your system as for your mobile phone. This will ensure the fastest, most reliable SMS text message delivery service and phone call connection.

NOTE: Even though the installation process of ESIM4 is not too complicated, we still recommend to perform it by a person with basic knowledge in electrical engineering and electronics to avoid any system damage.

4. GENERAL OPERATION DESCRIPTION

The battery powered GSM dialler ESIM4 uses the GSM network for event transmission by SMS text message and/or phone call to the preset user phone numbers. In addition to being informed about alarm and restore events of the inputs, the users can use the system to supply power to an auxiliary device and control one electrical appliance using an output or measure the temperature using up to 8 temperature sensors.

The system has two inputs (normally closed or normally open) for a detection device connection. By enabling the ATZ mode and connecting the resistors, 2 detection devices can be connected to each input. The system also supplies 12 volt power to an auxiliary device, such as, pressure sensor. In addition, the system comes equipped with a built-in shock sensor for any vibration detection where the system is placed.

ESIM4 can also be used as a mini alarm system supporting arming/disarming feature by iButton key.

ESIM4 can control 1 electrical appliance on receipt of the correct SMS text message or via *ELDES Configuration Tool* software. For example, users can turn on or off the heating, lighting, lift the gates, blinds etc.

By default, when an authorised number calls to the system, the device answers and the user can listen for 60 seconds to what is going on in the premises. This function works only when a microphone is connected. The system will ignore SMS requests and voice calls coming from unknown phone numbers.

Most of the time the system operates in Sleep mode allowing to save battery power for up to 2 years. However, when an event occurs, requiring the device to send SMS messages and/or dial one of the preset user phone numbers, the device will switch to Wake-Up mode.

5. CONFIGURATION METHODS

5.1. SMS Text Messages

! !!! In this user manual the underscore character "_" represents one space character. Every underscore character must be replaced by a single space character. There must be no spaces or other unnecessary characters at the beginning and at the end of the SMS text message.

SMS In order to configure and control the system by SMS text message, send the text command to the ESIM4 system phone number from one of the preset user phone numbers. The system supports multiple text commands arranged in a single SMS text message. The structure of SMS text message consists of 4-digit SMS password (the default SMS password is 0000 – four zeros), the parameter and value. For some parameters the value does not apply e. g. STATUS. The variables are indicated in lower-case letters, while a valid par ameter value range is indicated in brackets.

For more details on how to encrypt an SMS text message in a QR code, please refer to **5.3. QR Codes** and *ELDES Configuration Tool* software's HELP section.

5.2. ELDES Configuration Tool

Config Tool Software *ELDES Configuration Tool* is intended for ESIM4 battery powered GSM dialler configuration via USB port locally. This software simplifies system configuration process by allowing to use a personal computer in the process. Before starting to use *ELDES Configuration Tool* software, please read the user guide provided in the software's HELP section.

NOTE: Configuration by USB cable and *ELDES Configuration Tool* software does not require the batteries to be inserted in the device.

5.3. QR Codes

For user convenience, *ELDES Configuration Tool* software comes equipped with QR code generator allowing to arrange a single or multiple text commands in a single SMS text message and encrypt it in a QR code. Once the QR code is generated, the user using his mobile phone's built-in camera can take a picture of the code right from his monitor's screen, then decrypt it to the SMS text message using his mobile phone's application and send the SMS text message to the system.

Generate QR code	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

6. SMS PASSWORD

For security reasons, the system uses the following type of password:

SMS password – 4-digit password used for system configuration and control from user phone number by SMS text message . By default, SMS password is **0000**, which MUST be changed!

Set SMS password	**SMS**	**SMS text message content:** wwww_PSW:ssss **Value:** *wwww* – 4-digit default SMS password; *ssss* – 4-digit new SMS password; range – [0001... 9999]. **Example:** *0000_PSW:1111*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

7. USER PHONE NUMBERS

The system supports up to 10 user phone numbers identified as User 1 through 10. When the phone number is set, the user will be able to configure the system by SMS text messages as well as to receive the alarm/restore phone calls and SMS text messages from the system (see **10.3. Alarm/Restore Notifications**).

The system ignores any incoming calls and SMS text messages from a non-preset phone number as well as it rejects the SMS text messages containing wrong SMS password even from a preset user phone number.

To set User 1 phone number is mandatory, while the other 9 are optional. The supported phone number formats are the following:

- **International (with plus)** - The phone numbers must be entered starting with plus and an international country code in the following format: +[international code][area code][local number], example for UK: +4417091111111.
- **International (with 00)** - The phone numbers must be entered starting with 00 and an international country code in the following format: 00[international code][area code][local number], example for UK: 004417091111111.
- **Local** - The phone numbers must be entered starting with an area code in the following format: [area code][local number], example for UK: 017091111111.

Set user phone number	SMS	**SMS text message content:** ssss_NRup:ttteeellnnuumm **Value:** *ssss* - 4-digit SMS password; *up* - user phone number slot, range - [1... 10]; *ttteeelln-nuumm* - up to 15 digits user phone number. **Example:** *1111_NR1:+4417091111111*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View user phone numbers	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Delete user phone number	SMS	**SMS text message content:** ssss_NRup: **Value:** *ssss* - 4-digit SMS password; *up* - user phone number slot, range - [1... 10]. **Example:** *1111_NR4:*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: NEVER add a phone number of the device's SIM card as a user phone number!

ATTENTION: Once User 1 phone number is set, it will be restricted to modify it only.

NOTE: Multiple user phone numbers can be set by a single SMS text message, Example: 1111_NR1:+4417091111111_NR2:+4417091111112_NR6:017091111113_NR10:+4417091111114

8.DATE AND TIME

The system comes equipped with internal real-time clock (RTC) that keeps track of the current date and time. Once the system is up and running, the user must set the correct date and time, otherwise the system will not operate properly. After shutting down and starting up the system, the date and time must be set again.

Set date and time	**SMS**	**SMS text message content:** ssss_CLK:yyyy.mm.dd_hr:mn **Value:** *ssss* – 4-digit SMS password; *yyyy* – year; *mm* – month, range – [01... 12]; *dd* – day, range - [01... 31]; *hr* – hours, range - [00... 23]; *mn* – minutes, range - [00... 59]. **Example:** *1111_CLK:2013.03.16_14:33*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
View date and time	**SMS**	**SMS text message content:** ssss_STATUS **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_STATUS*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

For more details on how to view system's information that may include date and time, please refer to **16. SYSTEM INFORMATION. STATUS SMS**.

8.1. Automatic Date and Time Synchronization

This feature enables the system to set the date and time automatically without the user being involved in this process. The system supports the following method of automatic date and time synchronization that is used whenever the system switches to Wake-Up mode:

• **Via GSM network** - Once enabled, the system automatically sends a date/time request to the GSM operator. This method is the most accurate synchronization method. Some GSM operators might not support it.

By default, synchronization via GSM network is disabled. To enable/disable automatic date and time synchronization via GSM network, please refer to the following configuration methods.

Enable automatic date and time synchronization	**SMS**	**SMS text message content:** ssss_MTIME:ON **Value:** *ssss* – 4-digit SMS password; **Example:** *1111_MTIME:ON*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Disable automatic date and time synchronization	**SMS**	**SMS text message content:** ssss_MTIME:OFF **Value:** *ssss* – 4-digit SMS password; **Example:** *1111_MTIME:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

9. SLEEP AND WAKE-UP MODES

The system can operate in one of the following modes at a time:

- **Wake-Up** – The micro-controller and the GSM modem are active and the system is ready to send and accept the SMS text messages and phone calls to/from the preset user phone number.
- **Sleep** – The micro-controller and the GSM modem are disabled and the system will not be able to accept the SMS text messages or phone calls from the preset user phone number. Normally, this mode is used most of the system's uptime to significantly extend battery life.

The system starts up in Wake-Up mode and operates in this mode for 3 minutes. When the 3-minute period expires, the system will switch to Sleep mode and operate in this mode until an event occurs or Wake-Up scheduler comes into effect (see **9.1. Wake-Up Scheduler**).

When an event occurs, the system will follow this pattern:

    a) Switches to Wake-Up mode.
    b) Notifies the user by SMS text message and/or phone call.
    c) Stays in Wake-Up mode for 10 seconds.
    d) Returns to Sleep mode.

By default, after notifying the user on a certain event, the system will stay in Wake-Up mode for 10 second time period. To set a different time period, please refer to the following configuration methods.

Set time period to stay in Wake-Up mode after notifying the user	**SMS**	**SMS text message content:** ssss_MONT:se **Value:** *ssss* – 4-digit SMS password; *se* – seconds, range – [0... 65535]. **Example:** *1111_MONT:25*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View Wake-Up mode parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: All 4 batteries must be inserted in the device for the system to run in Wake-Up mode. If the system is connect to the PC only via USB cable, it will NEVER switch to Wake-Up mode.

NOTE: 0 value makes the system to instantly return to Sleep mode after notifying the user.

For more details on the system events and the algorithm of how the system sends the notifications, please refer to **17. SYSTEM NOTIFICATIONS.**

9.1. Wake-Up Scheduler

The system comes equipped with 5 schedulers that allow to set up the periods of time in day for the system to operate in Wake-Up mode. Typically, this feature is used for device configuration via SMS text messages and/or receiving system status on request.

Each scheduler includes the following parameters:

- **Status** - Determines whether the scheduler will apply or not.
- **Start: Hour | Minutes** - Determines the point in time when the system switches to Wake-Up mode.
- **End: Hour | Minutes** - Determines the point in time when the system switches back to Sleep mode.

By default, all schedulers are disabled and unset. To enable/disable and set up the schedulers, please refer to the following configuration methods.

Enable and set up scheduler	**SMS**	**SMS text message content:** ssss_ERTc:hr:mn_ hr:mn **Value:** *ssss* - 4-digit SMS password; *c* - scheduler number, range - [1... 5]; *hr* - hours, range - [00... 23]; *mn* - minutes, range - [00... 59]. **Example:** *1111_ERT4:15:02_19:00*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable scheduler	**SMS**	**SMS text message content:** ssss_ERTc:OFF **Value:** *ssss* - -digit SMS password; *c* - scheduler number, range - [1... 5]. **Example:** *1111_ERT4:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View scheduler parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

10. INPUTS

The system comes equipped with 2 inputs identified as Z1 and Z2. Depending on the selected input mode, the inputs are designed for different detection device connection, such as pressure sensors, door contacts, temperature sensors etc. (see **10.1. Input Z1** and **10.2. Input Z2**). Once the detection device is triggered, the system will switch to Wake-Up mode and send a notification to the user phone number (see **10.3. Alarm/Restore Notifications**).

The ATZ (Advanced Technology Zone) mode is a software-based feature that doubles the number of inputs and enables two detection devices to be installed per 1 input terminal. Once this mode is enabled, it will result in additional input, identified as input Z3 (on input terminal Z1) and input Z4 (on input terminal Z2), appearance. The detection devices must be wired to the input terminals as provided in **2.3. Wiring Diagrams.**

Enable ATZ mode for input Z1 and input Z2	**SMS**	**SMS SMS text message content:** ssss_ATZ:1;1 **Value:** *ssss* – 4digit SMS password. **Example:** *1111_ATZ:1;1;*
	Config Tool	Config Tool This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Disable ATZ mode for input Z1 and input Z2	**SMS**	**SMS SMS text message content:** ssss_ATZ:0;0 **Value:** *ssss* – 4digit SMS password. **Example:** *1111_ATZ:0;0;*
	Config Tool	Config Tool This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

10.1. Input Z1

Input Z1 can operate in one of the following modes at a time:

- **Digital** – The system monitors the input voltage resulting in the input state change. Normally, this mode is used for door contacts and other passive or active digital level sensors. This mode is set by default. For more details on how to manage the Digital mode, please refer to **10.1.1. Digital Mode.**
- **Analog** – The system monitors the input current ranging resulting in the input state change. Typically, this mode is used for water-level sensors, pressure sensors and other analog level sensors. For more details on how to manage the Analog mode, please refer to **10.1.2. Analog Mode.**

When active detection device is used, AUX output is required to power up the detection device. For more details, please refer to **10.1.3 AUX Output.**

Set input mode as Analog	**SMS**	**SMS text message content:** ssss_Z1:AN **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_Z1:AN*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Set input mode as Digital	**SMS**	**SMS text message content:** ssss_Z1:DIG **Value:** *ssss* – 4digit SMS password. **Example:** *1111_Z1:DIG*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
View input mode parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

10.1.1. Digital Mode

When Digital mode is set, the system follows this pattern:

a) Monitors input voltage ranging from 0 mV through 3000 mV every 1 second.

b) Verifies if the set up threshold (by default – 1500 mV) is not exceeded.

c) By default, the input is set as NO (normally open), therefore if the voltage drops below the threshold, it will result in input state change to alarm followed by notifying the user by SMS text message and/or phone call.

d) When the voltage rises above the threshold, it will result in input state change to restore followed by notifying the user by SMS text message and/or phone call.

Set threshold for input Z1 (and input Z3)	**SMS**	**SMS text message content:** ssss_Z1VLEV:vthr **Value:** *ssss* - 4-digit SMS password; *vthr* – threshold, range - [0... 3000] mV **Example:** *1111_Z1VLEV:2350*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Set input as NC (normally closed)	**SMS**	**SMS text message content:** ssss_Zi:NC **Value:** *ssss* - 4-digit SMS password; *i* – input number, range - [1, 3]. **Example:** *1111_Z1:NC*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Set input as NO (normally open)	**SMS**	**SMS text message content:** ssss_Zi:NO **Value:** *ssss* - 4-digit SMS password; *i* – input number, range - [1, 3]. **Example:** *1111_Z3:NO*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
View input state	**SMS**	**SMS text message content:** ssss_STATUS **Value:** *ssss* - 4-digit SMS password. **Example:** *1111_STATUS*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
View real-time input voltage	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
View Digital mode parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

NOTE: If AUX output is used along with Digital input mode, the input voltage will be monitored in accordance with the set up period (by default - every 3600 seconds) (see **10.1.3. AUX Output**).

For more details on how to manage the alarm/restore notifications, please refer to **10.3. Alarm/Restore Notifications.**

For more details on how to view system's information that may include input state, please refer to **16. SYSTEM INFORMATION. STATUS SMS.**

10.1.2. Analog Mode

When Analog mode is set, the system follows this pattern:

a) Monitors input current ranging from 0 mA through 24 mA in accordance with the set up period (by default – every 3600 seconds).

b) Verifies if the set up threshold (by default – 15 mA) is not exceeded.

c) If the current rises above the threshold, it will result in input state change to alarm followed by notifying the user by SMS text message and/or phone call.

d) When the current drops below the threshold, it will result in input state change to restore followed by notifying the user by SMS text message and/or phone call.

Set period	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Set threshold fir input Z1 (and input Z3)	SMS	**SMS text message content:** ssss_Z1CLEV:ct **Value:** *ssss* – 4-digit SMS password; *ct* – threshold, range - [0... 24.0] mA. **Example:** *1111_Z1CLEV:16.3*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View input state	SMS	**SMS text message content:** ssss_STATUS **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_STATUS*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View Analog mode parameters	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

For more details on how to manage the alarm/restore notifications, please refer to **10.3. Alarm/Restore Notifications**.

For more details on how to view system's information that may include input state, please refer to **16. SYSTEM INFORMATION. STATUS SMS.**

10.1.3. AUX Output

The system comes equipped with AUX output that can supply power to auxiliary devices requiring 12 V, 200 mA max. DC. Typically, the AUX output is used for connecting active detection devices, such as pressure sensors.

By default, the AUX output is disabled. Once enabled, the system will follow this pattern:

a) Powers up AUX output in accordance with the set up period (by default – every 3600 seconds) for a set duration (by default – 10 seconds).

b) Once the duration expires, the system verifies if the set up threshold is not exceeded.

c) If the threshold is exceeded, it will result in input state change followed by notifying the user by SMS text message and/or phone call regarding input alarm/restore.

Enable AUX output, set period and power up duration	SMS	**SMS text message content:** ssss_AUX:dduu:ppee **Value:** *ssss* – 4-digit SMS password; *dduu* – duration, range - [1... 4294967295] seconds; *ppee* – period, range - [1... 4294967295] seconds. **Example:** *1111_AUX:15:45*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable AUX output	**SMS**	**SMS text message content:** ssss_AUX:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_AUX:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View real-time AUX voltage	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View AUX output parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: AUX output can be used along with input Z1 only.

NOTE: If AUX output is used along with Digital input mode, the input voltage will be monitored in accordance with the set up period (by default - every 3600 seconds).

10.2. Input Z2

Input Z2 can operate in one of the following modes at a time:

- **Digital** - The system monitors the input voltage resulting in the input state change. Normally, this mode is used for door contacts and other passive digital level sensors. This mode is set by default. For more details on how to manage the Digital mode, please refer to **10.2.1. Digital Mode.**
- **Temperature Sensor** - The input converts to 1-Wire interface for temperature sensor connection. For more details on how to manage the Temperature Sensor mode, please refer to **10.2.2. Temperature Sensor Mode.**
- **iButton key** - The input converts to 1-Wire interface for iButton key and buzzer connection. For more details on how to manage the iButtons, please refer to **10.2.3. iButton Key Mode**.

Set input mode as Temperature Sensor	**SMS**	**SMS text message content:** ssss_Z2:TEMP **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_Z2:TEMP*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Set input mode as Digital	**SMS**	**SMS text message content:** ssss_Z2:DIG **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_Z2:DIG*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Set input mode as iButton Key	**SMS**	**SMS text message content:** ssss_Z2:KEY **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_Z2:KEY*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

| View input mode parameters | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

10.2.1. Digital Mode

When Digital mode is set, the system follows this pattern:

a) Monitors input voltage ranging from 0 mV through 3000 mV every 1 second.

b) Verifies if the set up threshold (by default – 1500 mV) is not exceeded.

c) By default, the input is set as NO (normally open), therefore if the voltage drops below the threshold, it will result in input state change to alarm followed by notifying the user by SMS text message and/or phone call.

d) When the voltage rises above the threshold, it will result in input state change to restore followed by notifying the user by SMS text message and/or phone call.

| Set threshold for input Z2 (and input Z4) | **SMS** | **SMS text message content:**
ssss_Z2VLEV:vthr
Value: *ssss* – 4-digit SMS password; *vthr* – threshold, range - [0... 3000] mV.
Example: *1111_Z2VLEV:1390* |
| | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

| Set input as NC (normally closed) | **SMS** | **SMS text message content:**
ssss_Zi:NC
Value: *ssss* – 4-digit SMS password; *i* – input number, range – [2, 4].
Example: *1111_Z2:NC* |
| | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

| Set input as NO (normally open) | **SMS** | **SMS text message content:**
ssss_Zi:NO
Value: *ssss* – 4-digit SMS password; *i* – input number, range – [2, 4].
Example: *1111_Z4:NO* |
| | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

| View input state | **SMS** | **SMS text message content:**
ssss_STATUS
Value: *ssss* – 4-digit SMS password.
Example: *1111_STATUS* |
| | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

| View real-time input voltage | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

| View Digital mode parameters | **Config Tool** | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

ATTENTION: Due to AUX output being associated with input Z1/Z3 only, Digital mode of input Z2/Z4 supports only passive digital level detection devices, unless powered externally.

For more details on how to manage the alarm/restore notifications, please refer to **10.3. Alarm/Restore Notifications.**

For more details on how to view system's information that may include input state, please refer to **16. SYSTEM INFORMATION. STATUS SMS.**

10.2.2. Temperature Sensor Mode

The system may be equipped with up to 8 temperature sensors intended for temperature measurement in the surrounding areas. This feature allows to monitor the temperature of up to 8 different areas. The temperature value is automatically updated in accordance with the set up period (by default – every 60 minutes). To set a different temperature update period, please refer to the following configuration methods.

Set temperature update period	**SMS**	**SMS text message content:** ssss_PTEMP:temp-per **Value:** *ssss* – 4-digit SMS password; *temp-per* – temperature update period, range – [3... 71000000] minutes. **Example:** *1111_PTEMP:45*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Adding, Removing and Replacing Temperature Sensors

To add a temperature sensor to the system, proceed as follows:

1. Shutdown the system.
2. Wire up the temperature sensor to the terminals (see **2.3. Wiring Diagrams**).
3. If more than one temperature sensor is required, wire up another sensor in parallel to the previous one.
4. Add as many temperature sensors as necessary – wire up one after another in parallel – until the number of 8 sensors is reached.
5. Power up the system.
6. Enable the temperature sensors.

To enable the temperature sensor (-s), please refer to the following configuration method.

Enable temperature sensor (-s)	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

To view the temperature values of all temperature sensors, please refer to the following configuration method.

View temperature values of all temperature sensors	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

If a temperature sensor becomes faulty, it is recommended to remove it or replace it by a functional sensor.

Remove/replace faulty temperature sensor	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

NOTE: When multiple temperature sensors are connected, please touch and hold the sensor with your fingers and watch the temperature value change to identify the number of the temperature sensor slot.

Temperature Info SMS

The system supports an SMS text message identified as the Temperature Info SMS, which is automatically delivered to the preset user phone number if the minimum (MIN) (by default – 20 °C) or maximum (MAX) (by default – 30 °C) temperature threshold of any temperature sensor is exceeded.
Optionally, a name for a temperature can be set that will be included in the Temperature Info SMS when delivered to the preset phone number. This feature allows easier identification of the temperature sensor and normally it is used when monitoring temperature in multiple areas.

To set and view the MIN, MAX temperature thresholds and name of a certain temperature sensor, please refer to the following configuration methods.

Enable temperature sensor and set MIN and MAX temeprature thresholds and name	**SMS**	**SMS text message content:** ssss_TEMPts:mnn:mxx:temp-name **Value:** *ssss* – 4-digit SMS password; *ts* – temperature sensor slot number, range – [1... 8]; *mnn* – MIN temperature threshold, range - [-55... 125] C; *mxx* – MAX temperature threshold, range - [-55... 125] C; *temp-name* – up to 8 characters temperature sensor name. **Example:** *1111_TEMP3:-14:32:House*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View MIN and MAX temeprature thresholds and name	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

To stop Temperature Info SMS sending, please disable a certain temperature sensor. To disable it, please refer to the following configuration methods.

Disable temperature sensor	**SMS**	**SMS text message content:** ssss_TEMPts:OFF **Value:** *ssss* – 4-digit SMS password; *ts* – temperature sensor slot number, range – [1... 8]. **Example:** *1111_TEMP2:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: Colon, dash, comma characters are NOT allowed in the input alarm/restore notification texts.

NOTE: If the MIN or MAX temperature threshold is exceeded, the system will NOT send the Temperature Info SMS text message to the preset user phone number before the current temperature value has been updated

For more details on the system events and the algorithm of how the system sends the notifications, please refer to **17. SYSTEM NOTIFICATIONS**.

10.2.3. iButton Key Mode

An iButton key is a unique 64-bit ID code containing chip enclosed in a stainless steel tab usually implemented in a small plastic holder. ESIM4 system supports up to 8 iButton keys each holding a unique identity code (ID), which is used for system arming and disarming (see **15. ARMING AND DISARMING**).

For more details on how to wire the iButton key reader, please refer to **2.3. Wiring Diagrams**.

10.2.3.1. Adding and Removing iButton Keys

To add an iButton key to the system, do the following:
a) Enable Programming mode.
b) Touch the key to the iButton key reader when the system is disarmed.
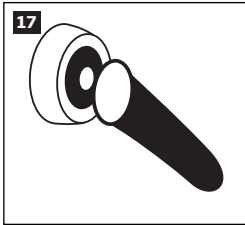
d) The successfully added iButton key will be indicated by short beeps emitted by the system's buzzer (if any)
e) Add as many iButton keys as necessary – touch one key after another to the reader – until the number of 8 keys is reached.

Enable Programming mode	**SMS**	**SMS text message content:** ssss_KEY:START **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_KEY:START*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

When adding of iButton keys is complete, please disable Programming mode.

Disable Programming mode	**SMS**	**SMS text message content:** ssss_KEY:END **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_KEY:END*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

If the iButton key is lost or stolen, due to security reasons it is highly recommended to remove it from the system

Remove iButton key from the system	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

10.2.3.2. iButton Key Names

When the system is armed or disarmed by iButton key, the system sends a confirmation by SMS text message to preset user phone number. The SMS text message contains system status as well as it may contain a user name, set to the iButton key.

Manage iButton key name	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

10.3. Alarm/Restore Notifications

In the event of input alarm or restore, the system can notify the preset user phone number by the following methods that can be used individually or simultaneously:
- SMS text message.
- Phone call.

The system supports input alarm/restore notification delivery restriction feature by time. For more details, please refer to to **12. ALARM/RESTORE NOTIFICATION SCHEDULER.**

SMS

By default, in the event of input alarm or restore, the system will follow this pattern:

a) The system attempts to send an SMS text message containing input alarm/restore text to the first preset user phone number only.

b) If the user phone number is unavailable and the system fails to receive the SMS delivery report within 45 seconds, it will attempt to send the SMS text message to the next preset user phone number. The system may fail to deliver the SMS text message to the preset user phone number due to the following reasons:
   - user's mobile phone has been switched off.
   - user's mobile phone has been out of GSM signal coverage.
   - alarm/restore notification scheduler has not yet come into effect, if enabled.

c) The system will continue sending the SMS text message to the next preset user phone numbers in the priority order until one is available. The system sends the SMS text message only once and will not return to the first user phone number if the last one was unavailable.

d) If the system ends up with all unsuccessful attempts, it will queue up the event in the event memory and attempt to send all the queued up events by SMS text message to the preset user phone number in accordance with the set up period and number of attempts (see **18. EVENT MEMORY**).

To manage input alarm and restore SMS text messages, please refer to the following configuration methods.

Disable input alarm notification	**SMS**	**SMS text message content:** ssss_SAZi:OFF **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]. **Example:** *1111_SAZ1:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Enable input alarm notification	**SMS**	**SMS text message content:** ssss_SAZi:ON **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]. **Example:** *1111_SAZ4:ON*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Set input alarm text	**SMS**	**SMS text message content:** ssss_TAZi:in-alarm-text **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]; *in-alarm-text* – up to 23 characters input alarm text. **Example:** *1111_TAZ3:Alarm Z3*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

		SMS text message content:
Disable input restore notification	**SMS**	ssss_SRZi:OFF **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4] **Example:** *1111_SRZ2:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

		SMS text message content:
Enable input restore notification	**SMS**	ssss_SRZi:ON **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4] **Example:** *1111_SRZ3:ON*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

		SMS text message content:
Set input restore text	**SMS**	ssss_TRZi:in-restore-text **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]; *in-restore-text* – up to 23 characters input restore text. **Example:** *1111_TRZ1:Restore Z1*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View input alarm/ restore notification parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

NOTE: The system will NOT store the alarm/restore event in the event memory if the event has occurred while the alarm/restore notification scheduler, if enabled, has not yet come into effect.

ATTENTION: Colon, dash, comma characters are NOT allowed in the input alarm/restore notification texts.

The system comes equipped with ringing the preset user phone number (by default – disabled) in the event of input alarm/ restore. If enabled, the system will follow this pattern:

a) The system attempts to ring the first preset user phone number.

b) When the call is answered, the user will be able to hear short beeps reflecting the number of the violated input (one beep = input Z1; two beeps = input Z2). Overall the user will be able to listen on the mobile phone for 60 seconds to what is happening in the area, surrounding the system (see **19. REMOTE LISTENING**).

c) The system will dial the next preset user phone number if the previous user was unavailable due to the following reasons:

- mobile phone has been switched off.
- mobile phone has been out of GSM signal coverage.
- has provided "busy" signal.
- user did not answer the call after several rings, predetermined by the GSM operator.

d) The system will continue dialing the next preset user phone numbers in the priority order until one is available.

e) The system dials only once and will not return to the first user phone number if the last one was unavailable. The system will not dial the next preset user phone number if the previous one was available, but rejected the phone call.

NOTE: Violated input number indication by short beeps apply to input Z1 and input Z2 only.

To manage calls in the event of input alarm and restore, please refer to the following configuration methods.

Enable call in the event of input alarm	**SMS**	**SMS text message content:** ssss_CAZi:ON **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]. **Example:** *1111_CAZ2:ON*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable call in the event of input alarm	**SMS**	**SMS text message content:** ssss_CAZi:OFF **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]. **Example:** *1111_CAZ3:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Enable call in the event of input restore	**SMS**	**SMS text message content:** ssss_CRZi:ON **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]. **Example:** *1111_CRZ1:ON*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable call in the event of input restore	**SMS**	**SMS text message content:** ssss_CRZi:OFF **Value:** *ssss* – 4-digit SMS password; *i* – input number, range – [1... 4]. **Example:** *1111_CRZ1:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View input alarm/restore notification parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: Input alarm/restore notifications do NOT apply when input Z2 is set up to operate in Temperature Sensor or iButton Key mode. For more details, please refer to **10.2.2. Temperature Sensor Mode** and **10.2.3. iButton Key Mode**.

NOTE: If the system ends up with all unsuccessful attempts to ring the preset user phone number, it will NOT store the event in the event memory.

NOTE: The system will NOT ring the preset user phone number nor store the alarm/restore event in the event memory if the event has occurred while the alarm/restore notification scheduler, if enabled, has not yet come into effect.

10.3.1. Alarm Delay

The system comes equipped with alarm notification delay feature allowing to limit alarm notification delivery to the preset user phone number within a specified time-frame.

By default, the alarm delay feature is disabled. Once a delay period is set up for a certain input or shock sensor, by violating the input or shock sensor after arming the system and/or on the first system run, the system will instantly transmit an alarm notification to the preset user phone number. The system will ignore a repeated violation of the same input/shock sensor while the delay period is in progress. Once the delay period has expired, the input/shock sensor violation will lead to alarm notification delivery to the preset user phone number.

NOTE: Alarm delay feature does NOT apply to restore notifications.

11. SHOCK SENSOR

ESIM4 has a built-in shock sensor that detects the surface vibrations of the location where the device is installed. This feature allows to receive the alarm/restore notifications by SMS text message to the preset user phone number in accordance with the number of set up shakes in a certain time period (by default – for alarm event: more than 10 shakes in 15 seconds; for restore event: up to 30 shakes in 40 seconds).

The system supports shock sensor alarm/restore notification delivery restriction feature by time. For more details, please refer to to **12. ALARM/RESTORE NOTIFICATION SCHEDULER**.

By default, the shock sensor is disabled. To enable/disable the shock sensor, set a different number of shakes, time period, manage alarm/restore SMS text messages and manage alarm delay duration, please refer to the following configuration methods.

Enable shock sensor and set number of shakes and period for alarm/restore event	**SMS**	**SMS text message content:** ssss_SHOCK:alms-almp;rets-retp **Value:** *ssss* – 4-digit SMS password; *alms* – minimum number of shakes for alarm event occurrence, range – [1... 1000]; *almp* – time period for alarm event occurrence, range – [1... 1000] seconds; *rets* – maximum number of shakes for restore event occurrence, range – [1... 1000]; *retp* – time period for restore event occurrence, range – [1... 1000] seconds. **Example:** *1111_SHOCK:30-45;48-59*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Set shock sensor alarm text	**SMS**	**SMS text message content:** ssss_TAS:shock-alarm-text **Value:** *ssss* – 4-digit SMS password; *shock-alarm-text* - up to 23 characters shock sensor alarm text. **Example:** *1111_TAS:Shock sensor alarm*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Set shock sensor restore text	**SMS**	**SMS text message content:** ssss_TRS:shock-restore-text **Value:** *ssss* – 4-digit SMS password; *shock-restore-text* - up to 23 characters shock sensor restore text. **Example:** *1111_TRS:Shock sensor restore*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Disable shock sensor	**SMS**	**SMS text message content:** ssss_SHOCK:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_SHOCK:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

By default, shock sensor alarm notification will be delivered

View shock sensor parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: Colon, dash, comma characters are NOT allowed in the shock sensor alarm/restore notification texts.

12. ALARM/RESTORE NOTIFICATION SCHEDULER

The system supports a scheduler that allow to set up a period of time in day to restrict input and shock sensor alarm/restore notification delivery by SMS text message and input alarm/restore phone call to the preset user phone number. The scheduler includes the following parameters:

- **Status** - Determines whether the scheduler will apply or not. Once enabled, the system will be able to deliver input alarm/restore notifications only when the scheduler comes into effect.
- **Start: Hour | Minutes** - Determines the point in time when the system is permitted to deliver alarm/restore notifications.
- **End: Hour | Minutes** - Determines the point in time when the system is denied to deliver alarm/restore notifications.

By default, the scheduler is disabled and unset. To enable/disable and set up the scheduler, please refer to the following configuration methods.

Enable and set up scheduler	SMS	**SMS text message content:** ssss_ETIME:hr:mn_ hr:mn **Value:** *ssss* – 4-digit SMS password; *hr* – hours, range – [00… 23]; *mn* – minutes, range – [00… 59]. **Example:** *1111_TIME:08:00_19:15*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable scheduler	SMS	**SMS text message content:** ssss_ETIME:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_CRZ1:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View scheduler settings	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

13. OUTPUT

The system comes equipped with 1 open collector output C1 designed for electricalal appliance connection. Normally, the output can be used to open/close garage doors, activate lights, heating, watering and much more. When a output turns ON, the system triggers any device or relay connected to it.

When input Z2 is operating in Temperature Sensor mode or iButton Key mode, C1 converts to +4V power supply output terminal for temperature sensor or buzzer connection respectively. In such case C1 terminal can not be used as open-collector output. For more details, please refer to **10.2.2. Temperature Sensor Mode** and **10.2.3. iButton Key Mode**.

For more details on how to wire the output, please refer to **2.3. Wiring Diagrams.**

13.1. Output Name

The output has a name that can be customized by the user. Typically, the name specifies a device type connected to the output, for example: *Lights*.

By default, output C1 name is *Output1*. To rename the output, please refer to the following configuration methods.

| Rename output | SMS | **SMS text message content:** ssss_TC1:out-name
 Value: *ssss* – 4-digit SMS password; *out-name* – up to 23 characters output name
 Example: *1111_TC1:Lamp* |
| | Config Tool | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

| View output name | SMS | **SMS text message content:** ssss_STATUS
 Value: *ssss* – 4-digit SMS password.
 Example: *1111_STATUS* |
| | Config Tool | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

> **ATTENTION:** Colon, dash, comma characters are NOT allowed in the output name.

For more details on how to view system's information that may include output name, please refer to **16. SYSTEM INFORMATION. STATUS SMS.**

13.2. Turning Output ON and OFF

By default, the output is turned OFF. To instantly turn ON/OFF the output and set its state to ON/OFF when the system starts-up, please refer to the following configuration methods.

| Turn ON output / Set output start-up state as ON | SMS | **SMS text message content:** ssss_C1:ON
 Value: *ssss* – 4-digit SMS password.
 Example: *1111_C1:ON* |
| | Config Tool | This operation may be carried out from the PC using the *ELDES Configuration Tool* software. |

Turn OFF output / Set output start-up state as OFF	**SMS**	**SMS text message content:** ssss_C1:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_C1:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

To instantly turn ON the output for a determined time period and automatically turn it OFF when the time period expires, please refer to the following configuration methods.

Turn ON output for time period in seconds	**SMS**	**SMS text message content:** ssss_C1:ON:time-per **Value:** *ssss* – 4-digit SMS password; *time-per* – time period, range – [1... 4294967295] seconds. **Example:** *1111_C1:ON:50*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Turn ON output for time period in minutes	**SMS**	**SMS text message content:** ssss_C1:ON:time-perM **Value:** *ssss* – 4-digit SMS password; *time-per* – time period, range – [1... 71582788] minutes. **Example:** *1111_C1:ON:7M*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

To instantly turn OFF the output for a determined time period and automatically turn it ON when the time period expires, please refer to the following configuration methods.

Turn OFF output for time period in seconds	**SMS**	**SMS text message content:** ssss_C1:OFF:time-per **Value:** *ssss* – 4-digit SMS password; *time-per* – time period, range – [1... 4294967295] seconds. **Example:** *1111_C1:ON:27*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Turn OFF output for time period in minutes	**SMS**	**SMS text message content:** ssss_C1:OFF:time-perM **Value:** *ssss* – 4-digit SMS password; *time-per* – time period, range – [1... 71582788] minutes. **Example:** *111_C1:OFF:5M*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View output status	**SMS**	**SMS text message content:** ssss_STATUS **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_STATUS*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

NOTE: The output can be turned ON for a determined time period only when it is in OFF state

NOTE: The output can be turned OFF for a determined time period only when it is in ON state

For more details on how to view system's information that may include output status, please refer to **16. SYSTEM INFORMATION. STATUS SMS**.

14. BATTERY LEVEL MONITORING

The system supports battery level monitoring feature allowing notify the preset user by SMS text message when a set up low battery level is reached (by default – 5%).

By default, low battery notification is disabled. To enable/disable this notification, set up a different low battery level and/or notification text, please refer to the following configuration methods.

Enable Low Battery notification and set low battery level	**SMS**	**SMS text message content:** ssss_LOWB:lev **Value:** *ssss* – 4-digit SMS password; *lev* – low battery level, range – [1...100] %. **Example:** *1111_LOWB:3*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Set Low Battery notification text	**SMS**	**SMS text message content:** ssss_TLOWB:lowb-text **Value:** *ssss* – 4-digit SMS password; *lowb-text* – up to 23 characters Low Battery notification text. **Example:** *1111_TLOWB:Low battery*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable Low Battery notification	**SMS**	**SMS text message content:** ssss_LOWB:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_LOWB:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View battery level	**SMS**	**SMS text message content:** ssss_STATUS **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_STATUS*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

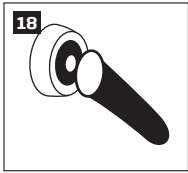|		
View battery level monitoring parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: Colon, dash, comma characters are NOT allowed in Low Battery notification text.

15. ARMING AND DISARMING

ESIM4 comes equipped with with mini-alarm system features allowing arming and disarming. Before using this feature, the iButton Key mode must be selected for Input Z2 and iButton key (-s) must be added to the system. For more details on iButton key management, please refer to **10.2.3. iButton Key Mode**.

To instantly arm or disarm the system, touch the iButton key reader by any of 8 available iButton keys. By default, when the iButton key is touched to the iButton key reader, the buzzer (see **13. OUTPUT**) will emit short beeps followed by SMS text message notification *ARMING* or *DISARMING* respectively. The notification will be simultaneously delivered to all preset user phone numbers that are enabled to receive arm and/or disarm notifications.

To modify the content of the notification, manage the arm or disarm notification delivery for a certain preset user phone number and disable or enable the buzzer, please refer to the following configuration methods.

Manage arm and disarm notification text	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable arm notification for individual user	**SMS**	**SMS text message content:** ssss_NRup:A:0 **Value:** *ssss* – 4-digit SMS password; *up* – user phone number slot, range – [1... 10]; **Example:** *1111_NR5:A:0*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Enable arm notification for individual user	**SMS**	**SMS text message content:** ssss_NRup:A:1 **Value:** *ssss* – 4-digit SMS password; *up* – user phone number slot, range – [1... 10]; **Example:** *1111_NR10:A:1*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable disarm notification for individual user	**SMS**	**SMS text message content:** ssss_NRup:D:0 **Value:** *ssss* – 4-digit SMS password; *up* – user phone number slot, range – [1... 10]; **Example:** *1111_NR6:D:0*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Enable disarm notification for individual user	**SMS**	**SMS text message content:** ssss_NRup:D:0 **Value:** *ssss* – 4-digit SMS password; *up* – user phone number slot, range – [1... 10]; **Example:** *1111_NR4:D:1*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

When attempting to arm the system in case of violated input presence, the system will arm the system followed by instant alarm notification. To avoid such cases, please restore the input/shock sensor before arming the system.

NOTE: When the system is disarmed, any input or shock sensor violation will be ignored.

16. SYSTEM INFORMATION. STATUS SMS

The system supports an informational SMS text message identified as the Status SMS, which can be delivered upon request. Once requested, the system will reply with Status SMS that may provide the following:

- System name.
- System date & time.
- Battery level.
- GSM signal strength.
- System's internal temperature.
- Name and status (ON/OFF) of the output.
- Input state/value

Request for system information	**SMS**	**SMS text message content:** ssss_STATUS **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_STATUS*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

By default, the aforementioned items, except System name, are excluded from the Status SMS. To include them, please refer to the following configuration method.

Manage Status SMS content	**SMS**	**SMS text message content:** ssss_TESTM:1;2;3;4;5;6;7;8 **Value:** *ssss* – 4-digit SMS password, *1* - system name; *2* - system date and time; *3* - battery level; *4* - GSM signal strength; *5* - system's internal temperature; *6* - name and status of the output; *7* - input Z1/Z3 state/value; *8* - input Z2/Z4 state/value. **Example:** *1111_TESTM:3;6;8;1;2*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

16.1. Periodic Status SMS

Once enabled, the system sends Status SMS to preset user phone number periodically every 1 hour. Typically, this feature is used to verify the online status of the system.

By default, periodic Status SMS is disabled. To enable/disable periodic Status SMS and/or set a different frequency, please refer to the following configuration methods.

Enable periodic Status SMS and set frequency	**SMS**	**SMS text message content:** ssss_TEST:frequen **Value:** *ssss* – 4-digit SMS password; *frequen* – frequency, range – [1... 1193046] hours. **Example:** *1111_TEST:15550*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Disable periodic Status SMS	**SMS**	**SMS text message content:** ssss_TEST:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_TEST:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

ATTENTION: Before using periodic Status SMS, please set the correct system date and time (see **8. DATE AND TIME**). Otherwise, the system will send this SMS text message at the wrong time.

17. SYSTEM NOTIFICATIONS

SMS

When an event occurs, the system will follow this pattern:

a) The system attempts to send an SMS text message to the first preset user phone number only.

b) If the user phone number is unavailable and the system fails to receive the SMS delivery report within 45 seconds, it will attempt to send the SMS text message to the next preset user phone number. The user phone number may be unavailable due to the following reasons:

- mobile phone has been switched off.
- mobile phone has been out of GSM signal coverage.

c) The system will continue sending the SMS text message to the next preset user phone numbers in the priority order until one is available. The system sends the SMS text message only once and will not return to the first user phone number if the last one was unavailable.

d) If the system ends up with all unsuccessful attempts, it will queue up the event in the event memory and attempt to send all the queued up events by SMS text message to the preset user phone number in accordance with the set up period and number of attempts (see **18. EVENT MEMORY**).

The following table provides the description of available system notifications sent to the user phone number by SMS text message.

Seq. No.	Event	Description
1	System Started	SMS text message sent to the user on system startup.
2	Low Battery	SMS text message sent to the user in case the battery level reaches the set up minimum value. For more details on how to manage this notification, please refer to **14. BATTERY LEVEL MONITORING.**
3	Input Alarm	SMS text message sent to the user in case input Z1, Z2, Z3 or Z4 is violated. For more details on how to manage this notification, please refer to **10.4. Alarm/Restore Notifications.**
4	Input Restore	SMS text message sent to the user in case input Z1 or Z2 is restored. For more details on how to manage this notification, please refer to **10.3. Alarm/Restore Notifications.**
5	Shock Sensor Alarm	SMS text message sent to the user in case the shock sensor is violated. For more details on how to manage this notification , please refer to **11. SHOCK SENSOR.**
6	Shock Sensor Restore	SMS text message sent to the user in case the input is restored. For more details on how to manage this notification, please refer to **11. SHOCK SENSOR.**
7	Periodic Status	Status SMS text message sent to the user periodically by the set up frequency (days) and time. For more details on how to manage this notification, please refer to **16. SYSTEM INFORMATION. STATUS SMS.**
8	Temperature Info	SMS text message sent to the user in case the temperature drops below the MIN or rises above the MAX value. For more details on how to manage this notification, please refer to **10.2.2. Temperature Sensor Mode.**
10	Armed	SMS text message sent to the user in case the system is armed. For more details on how to manage this notification, please refer to **15. ARMING AND DISARMING**
11	Disarmed	SMS text message sent to the user in case the system is disarmed. For more details on how to manage this notification, please refer to **15. ARMING AND DISARMING**

By default, System Started notification is disabled. To enable/disable it and set the text for this notification, please refer to the following configuration methods.

Enable System Started notification and set the text	**SMS**	**SMS text message content:** ssss_SSMS:start-text **Value:** *ssss* – 4-digit SMS password; *start-text* – up to 23 characters System Started notification text. **Example:** *1111_SSMS:ESIM4 started*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Disable System Started notification	**SMS**	**SMS text message content:** ssss_SSMS:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_SSMS:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

View System Started notification parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

For more details on how the system notifies the user in the event of input alarm/restore, please refer to **10.3. Alarm/Restore Notifications.**.

ATTENTION: Colon, dash, comma characters are NOT allowed in System Started notification text.

18. EVENT MEMORY

The system comes equipped with event memory that can hold up to 16 events. The event memory is of LIFO (last in, first out) type that allows the system to automatically overwrite the oldest events with the latest ones.

The event will queue up in the event memory if the system ends up with all unsuccessful attempts to deliver the SMS text message to the preset user phone number. The system will attempt to re-transmit all queued up events in accordance with the set up period (by default – every 10 minutes) and number of attempts (by default – 5 attempts).

By default, event memory is disabled. To enable/disable, clear the event memory or set a different re-transmission period and/or number of attempts, please refer to the following configuration method.

Enable event memory, set event re-transmission attempts and period	**SMS**	**SMS text message content:** ssss_LOG:atm-peri **Value:** *ssss* – 4-digit SMS password; *atm* – number of attempts, range - [1... 255]; *peri* - period, range - [1... 1000] minutes. **Example:** *1111_LOG:8-15*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Disable event memory	**SMS**	**SMS text message content:** ssss_LOG:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_LOG:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
Clear event memory	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.
View event memory parameters	**Config Tool**	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

NOTE: Event memory feature does NOT apply to calls in case of input alarm/restore.

19. REMOTE LISTENING

ESIM4 may be equipped with a microphone that allows the user to listen on his mobile phone to what is happening in the area surrounding the microphone. Remote listening feature can operate under the following conditions:

- The system makes a phone call to a preset user phone number in case of input alarm/restore and the user answers the call (see also **10.3. Alarm/Restore Notifications**).
- The user dials the system phone number and the system answers the call.

In both cases, the "conversation" will last for up to 60 seconds until the system automatically hangs up.

By default, when the preset user dials the system phone number, the system automatically answers the call. This feature is identified as Answer Call. To disable, enable the Answer Call feature and set a different microphone gain (by default - 12), please refer to the following configuration methods.

Disable Answer Call feature	**SMS**	**SMS text message content:** ssss_ANSWER:OFF **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_ANSWER:OFF*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Enable Answer Call feature	**SMS**	**SMS text message content:** ssss_ANSWER:ON **Value:** *ssss* – 4-digit SMS password. **Example:** *1111_ANSWER:ON*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

Set microphone gain	**SMS**	**SMS text message content:** ssss_MIC:mg **Value:** *ssss* – 4-digit SMS password; *mg* – microphone gain, range - [1...15]. **Example:** *1111_MIC:10*
	Config Tool	This operation may be carried out from the PC using the *ELDES Configuration Tool* software.

20. TECHNICAL SUPPORT

20.1. Troubleshooting

Indication	Possible reason
LED indicator is OFF	· Low battery power · Micro-controller fault
Unable to receive any SMS text message reply to the user phone number and control the device	· Insufficient SIM card credit balance · No GSM network signal · Wrong user phone number · User phone number is not set · System is operating in Sleep mode
Received SMS text message "Wrong syntax"	· Incorrect SMS text message structure · Unnecessary space character might have been typed in SMS text message

20.2. Restoring Default Parameters

1. Remove all 4 batteries.
2. Press and hold the DEF button.
3. Connect the device via USB cable to the PC.
4. Wait until the LED indicator quickly flashes several times.
5. Release the DEF button.
6. Parameters restored to default.

20.3. Updating the Firmware via USB Cable

1. Remove all 4 batteries.
2. Short circuit (connect) FW pins.
3. Connect the device via USB cable to the PC.
4. The new window must pop-up where you will find the .bin file. Otherwise open My Computer and look for CRP DISABLED drive.
5. Delete the .bin file found in the drive.
6. Copy the new firmware .bin file to the very same window.
7. Unplug USB cable.
8. Remove short circuit from FW pins.
9. Firmware updated.

NOTE: It is strongly recommended to restore default parameters after the firmware update.

21. RELATED PRODUCTS

DS18S20 - temperature sensor
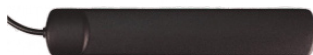
Adhesive flat GSM antenna

Microphone

Magnet mount straight GSM antenna

DS1990A-F5 - iButton key

ED1T - plastic enclosure with iButton key reader and temperature sensor