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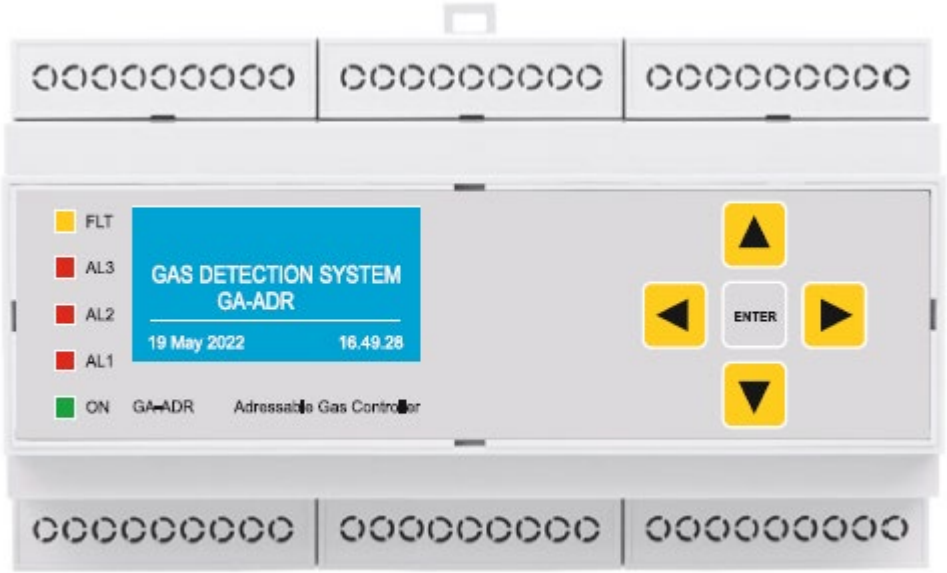

GA-ADR
GAS CONTROLLER

Operation Manual

Revision: A.2

Due to ongoing research and development, the specifications of this product may be changed at any time without notice.

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1. General Information

This manual is designed to provide users with simple and precise information. Manufacturer shall not be held responsible or liable for any misinterpretation that may result from the reading of this manual. Although every effort is made to ensure accuracy, this manual may contain unintentional technical inaccuracies.

Please read the following notice carefully before installation and start-up, paying particular attention to the end - user safety instructions. This user's guide should be distributed to every individual involved in the start-up, use, maintenance or repair of the product. The information contained in this manual, the data and technical drawings are correct as of the date of publication. Should questions arise, please contact Invest Electronics Ltd for additional information.

Manufacturer reserves the right to modify the technical characteristics of its equipment without notice to improve product performance. This user manual and its contents are the inalienable property of Invest Electronics Ltd

2. Safety Warnings

Installation and electric connections should be performed by a qualified professional, according to Manufacturer's specifications and to the standards of authorities in the field. Failure to observe these rules may result in serious injury. Accuracy, particularly regarding electricity and assembly (couplings, network connections) is imperative.

Icons have been placed on the sensor to call attention to general use safety precautions. These labels are an integral component of the sensor. The meanings of these labels are described below.

3. Symbols

Please refer to the instructions.

Caution: In the current operating mode, failure to adhere to the instructions preceding this symbol can result in a risk of electric shock or death.

This equipment must be grounded

Safety grounding terminal. A cable of adequate diameter must ground any terminal with this signal.

The accordance with Directive DEEE (2002/96/EC) this product may not be disposed with household waste. Dispose of this product at a collection site intended for electrical waste.

4. Important Information

The modification of any component or the use of any third party components will automatically void any and all guarantees. The central controller is intended to be used for precise applications of a technical nature. Exceeding the indicated values is strictly prohibited.

5. Limitation of liability

Neither Invest Electronics Ltd nor any other affiliated organization shall be held liable under any circumstances for any damage whatsoever including, without limitations, damages for loss of production, interruption of production, loss of information, controller failure, personal injury, loss of time, money, or materials, or for any indirect or consecutive consequence of loss occurring during the use of the product or the inability to use the product, even in the event that Invest Electronics Ltd had been informed of such damages.

6. Warranty

We hereby guarantee that gas detection controllers GA-ADR.E1 have been manufactured and tested to the highest quality standards.

We warrant above products to be free from materials and work defects for the period of 12 months from the date of purchase. If such defects appears during the warrantee period products will be repaired or replaced with new products without charge.

7. Technical specifications

The GA-ADR gas controller is a compact, economic unit, which is available in different versions and can handle up to 32 sensors and it is provided with 4 internal potential-free relays.

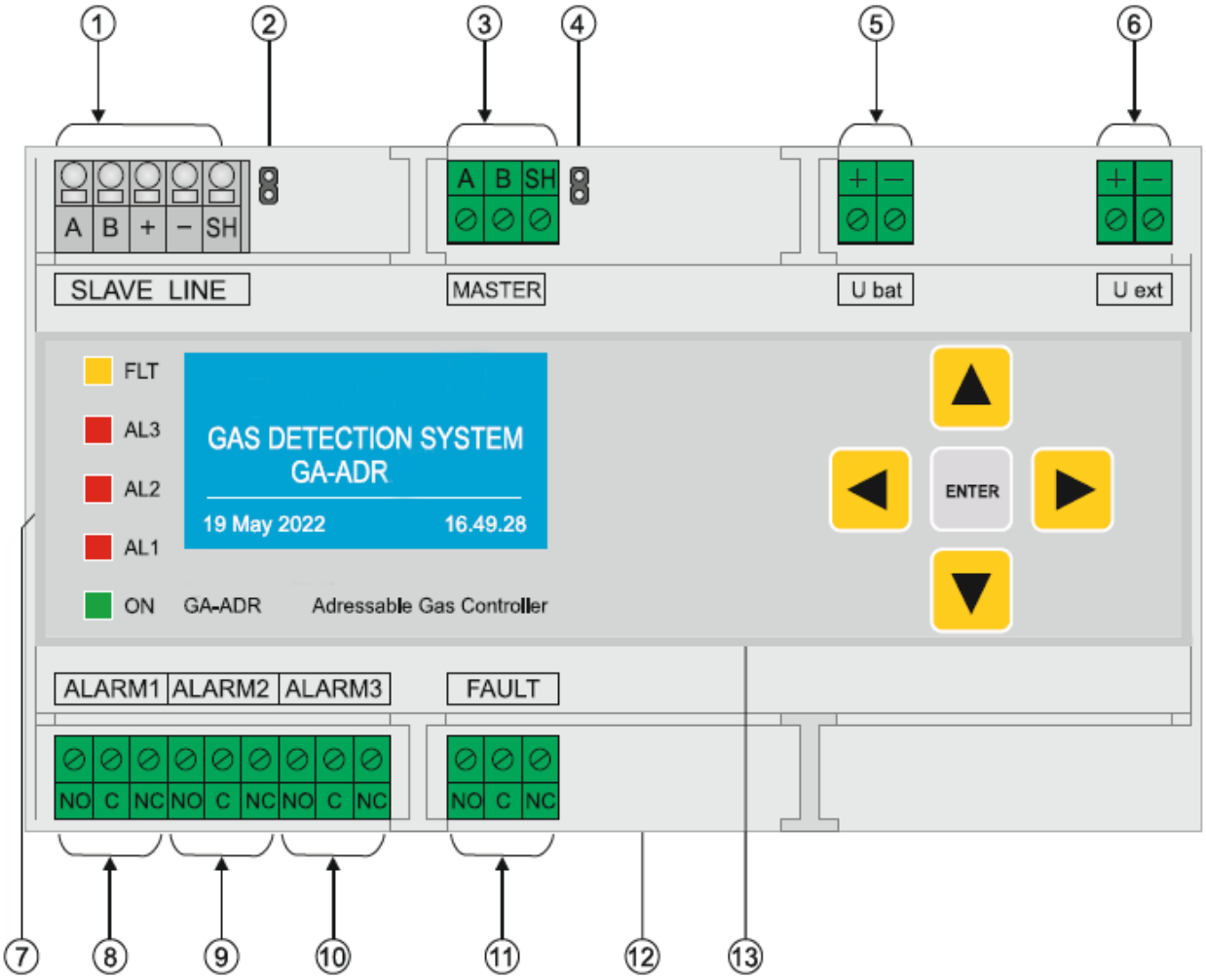
The GA-ADR gas controller is intended for installation on the DIN rail. The controller can be connected to combustible or toxic gas detectors, or oxygen detectors. The measured gas concentration are compared to the measurement from the detector is displayed on the display. In the event that the measurement exceeds the threshold, the controller activates the relays which can control external components (acoustic/light signal or solenoid valve).

Tabl. Technical specifications

Controller Model	GA-ADR -16-DC	GA-ADR -32-DC
INPUTS		
Number of input lines	1	1
Number of slaves	16	32
POWER SUPPLY		
Main power supply-DC	24 VDC	24 VDC
Back-up battery	24VDC/8A/h	24VDC/8Ah
Power consumption	Max 9W	Max 9W
ALARMS		
Alarm events	AL-1, AL-2, AL-3, FAULT	AL-1, AL-2, AL-3, FAULT
Alarming	LED, Internal buzzer	LED, Internal buzzer
Output relays	4 Relays SPDT-250V/2A	4 Relays SPDT-250V/2A
ENVIRONMENTAL		
Working temperature	-10 - +55ºC	-10 - +55ºC
Humidity	0 – 95% R.H.	0 – 95% R.H.
MECHANICAL		
Sizes	160 x 90 x 58mm	160 x 90 x 58mm
Weight	0,250kg	0,325kg
Enclosure material	ABS	ABS
Mounting method	DIN rail	DIN rail
CERTIFICATION		
Conformity mark	CE	CE
Standards applied	EN 50270	EN 50270

8. General introduction

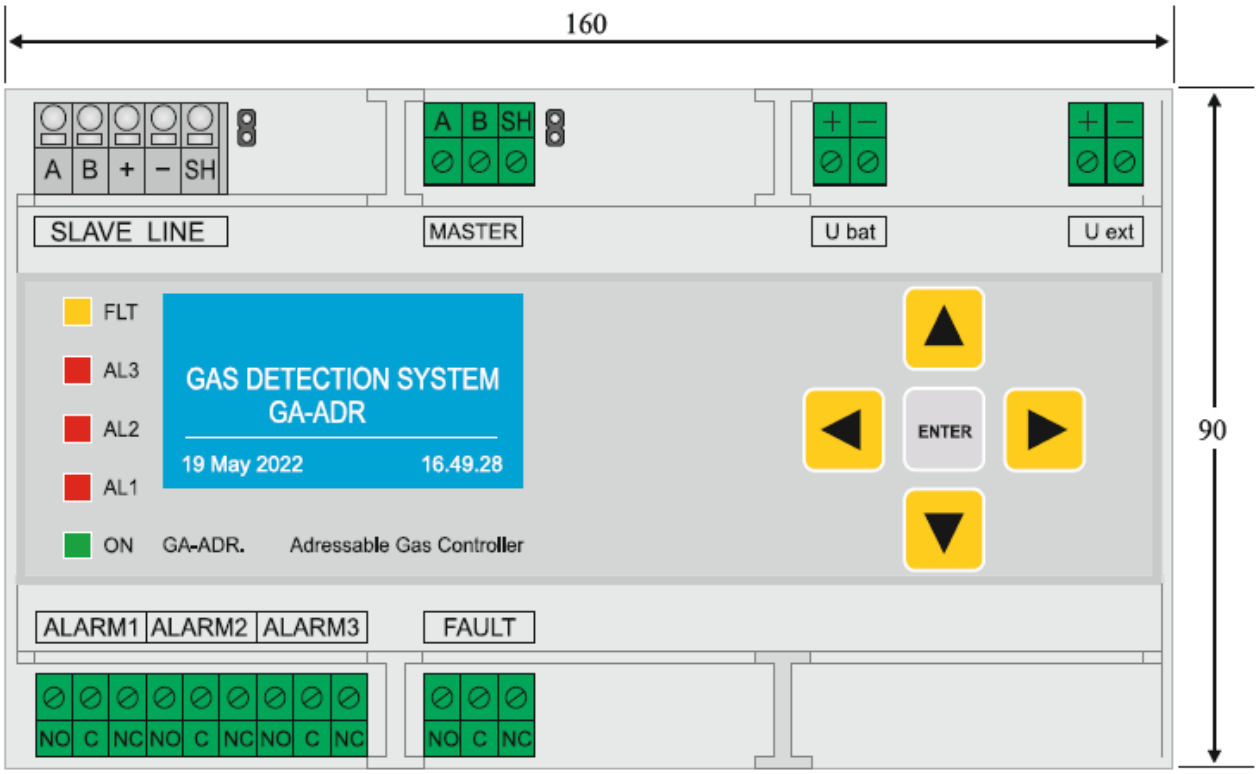
Gas Controller GA-ADR



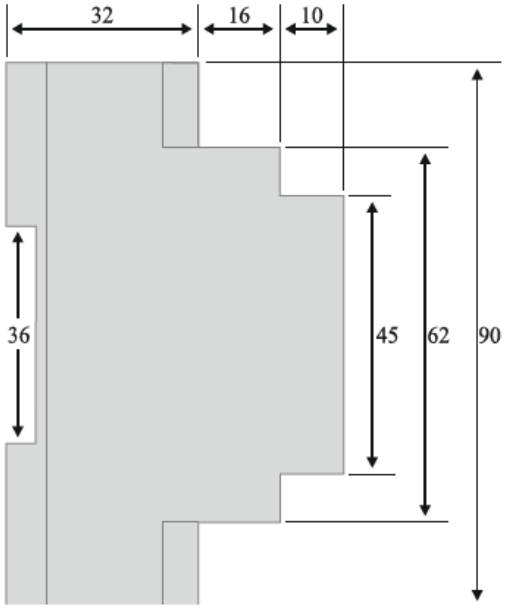
(1) SLAVE line terminal blocks
(2) Termination jumper for the slave line
(3) MASTER line terminal blocks
(4) Termination jumper for the master line
(5) External battery connection terminals
(6) External power supply 24 VDC
(7) LED indication
(8) Relay output Alarm 1
(9) Relay output Alarm 2
(10) Relay output Alarm 3
(11) Relay output Alarm 4
(12) Graphic LCD display
(13) Keyboard

9. Mechanical drawing

Front view



Side view



10. Installation and wiring

10.1. Mounting the controller

The GA-ADRshould be mounted on DIN rail. The controller may be installed in any area except for explosive atmospheres, ideally in a monitored area (control room, equipment room, security office, etc.), in a dry (no condensation) and temperate area. The controller's front panel should be forward facing, so that settings, monitoring and wiring can be easily accessed.

If ex-sensors are used, note the following checks must be carried out:
- The device must not show any damage or other conspicuous changes;
- The IP protection of the device must conform to the operational and environmental conditions;
- The operator must have already defined zones;
- Check whether the device category corresponds to the predefined zones.
  - Check the product documentation, whether any upstream safety devices (fuse, etc.) are required.
  -

10.2. Electrical connection

Gas detectors must be connected using shielded cable with twisted pair for communication **A** and **B** terminals and another pair for the power supply of gas detectors.

-Recommended is shielded cable 4x1.50mm - 2 twisted pairs. Data transmission with this cable is guaranteed up to approx. 1000 m.
-Using power supply 24VDC-5A for 32 pcs explosive gas detectors, 100 -150m distance from the power supply to detectors is possible. When more detectors or longer distance is required detectors can be powered locally and communication between detectors and controller is to be with 1 communication cable (twisted pair) with section 1.50mm and up to 1000m long.

The end of line resistor must be connected in the last device by placing of a end of line jumper. It should be 3000ohm and at least 0.25W.
Cable shielding must be connected to the cable shielding terminal of the gas controller.

The electrical connection must:
-Be carried out by a specialist and (with the controller) with the power supply disconnected.
-Verify the power supply grid must correspond to the supply indicated on the controller.
-Use a power cable connected to the grid 24 VDC with a minimum diameter of 1.5 mm² and a maximum diameter of 2.5mm2.

The GA-ADR does not have an on/off switch. Certain power supplies can cause serious or fatal injury. All installation and wiring should be performed before turning on the power supply.
Incorrect installation can lead to measurement errors or system failure, all instructions in this manual must be followed carefully to guarantee proper system operation.

10.3. Ground connection

The controller power supply must be connected to a functional ground connection. The ground terminal is indicated with the following symbol

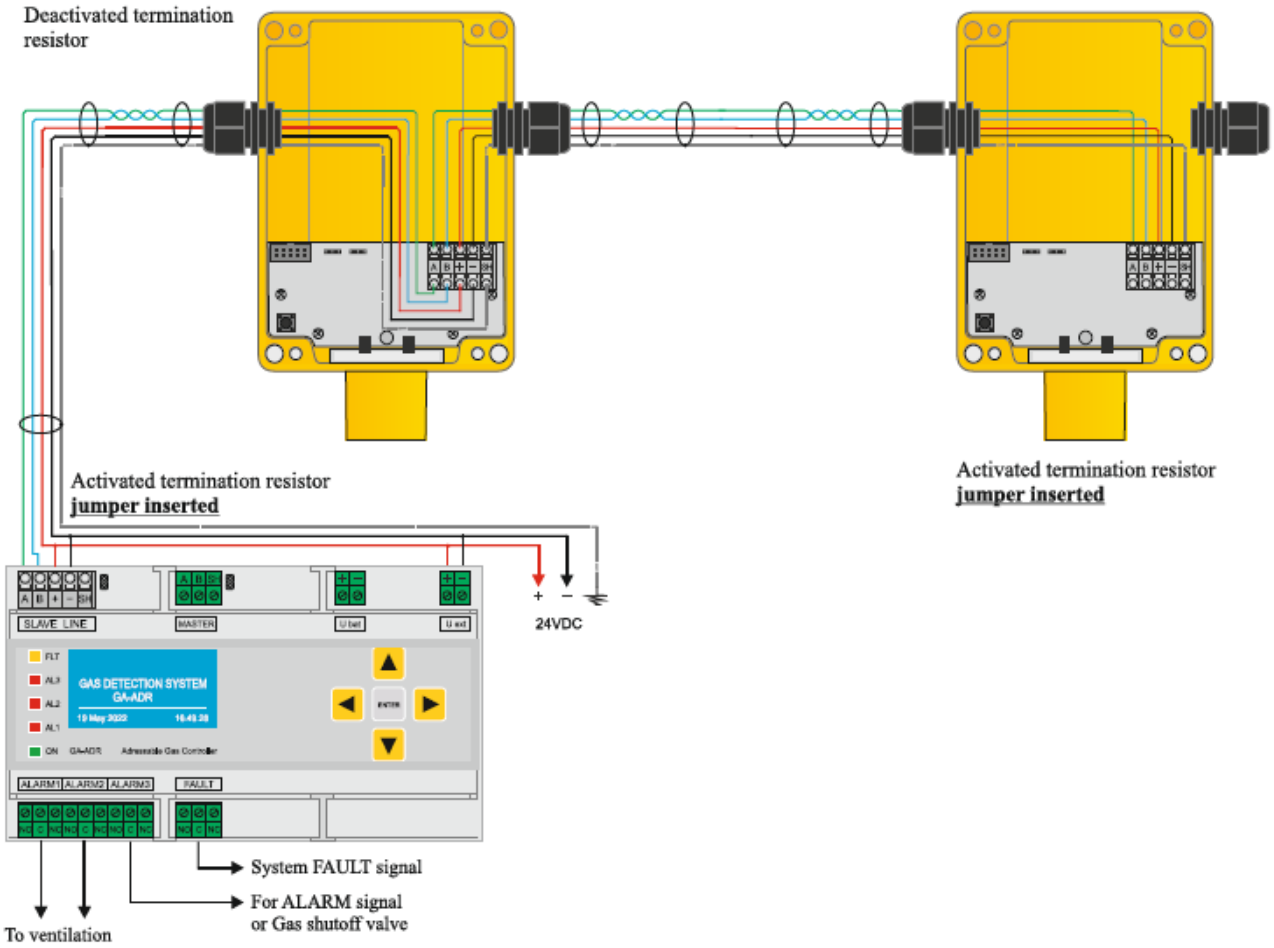
10.4. Power supply 24 VDC
Protection is provided by fuse. The sector power supply must be wired to the two terminals marked+ and - on the label of power supply unit. The power supply must be protected upstream by a differential bipolar circuit breaker with a nominal current of 1A. The response curve must be type D.

10.5. Battery back-up power supply 24 VDC
The 24 VDC power supply is connected to the terminals **Ubat +** and **-** as shown in the back panel picture of the controller.

10.6. Detector input
Detectors are connected to the terminals **"A" "B"** at the slave line terminal blocks. GA-ADR is designed to work with detector type GS-300 or GDPC. Communication between controller and the detectors takes place via RS485.

10.7. Relay outputs
The controller GA-ADR has 4 relay outputs which correspond to the preprogrammed alarm thresholds and FAULT of sensors or connection line. The relays are voltage free.

10.8. Typical wiring diagrammes of gas detection system including gas detection controller GA-ADR, addressable gas detectors GS-300 and addressable relay module



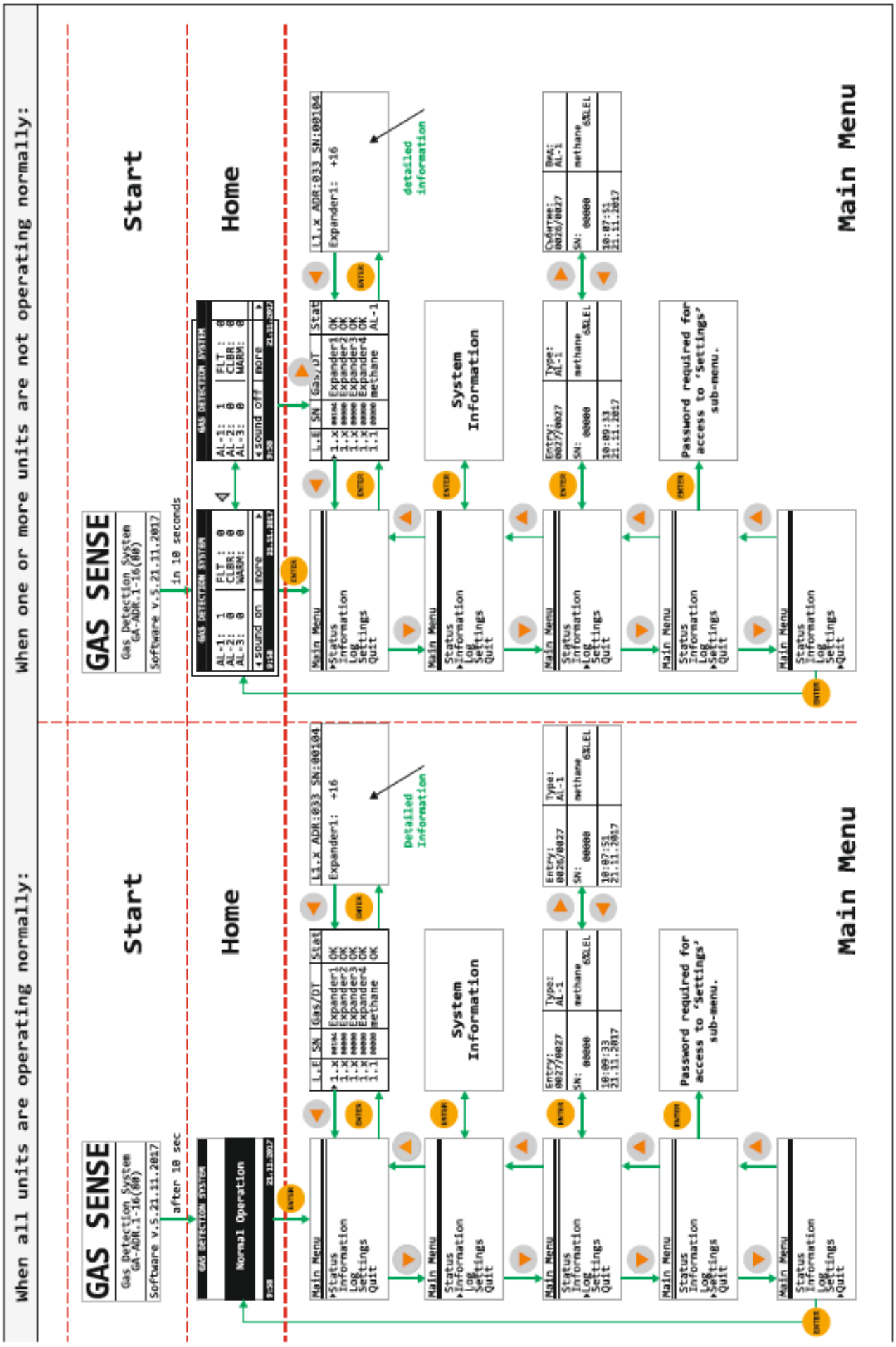
11. Operating instructions

11.1. Initial conecting

After correct wiring apply the power supply to the gas detection system.
The display of the unit will show the text "Initialization missing", press Enter and you will go to the main menu.
Select “Setting” from the main menu and enter with factory password “2000" (can be changed later). Go to the submenu and select “Initialization” to start the boot procedures. Once the procedures are completed, the system will enter "Normal operation mode” and the menu will be accessible via the buttons.

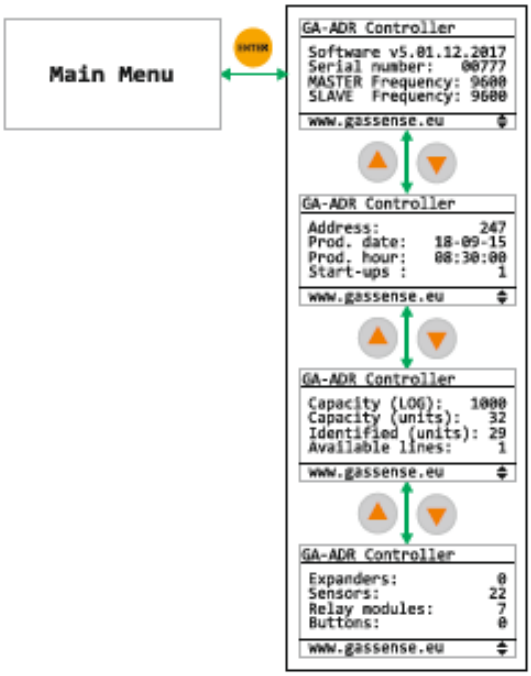
Note: in this phase it is recommended to assign a name (e.g. room n°1- room n°2...etc.) to each serial number of the detectors installed and detected by the controller in the initialization phase.
This operation will be essential if an event occurs, as the unit will display the serial number of the detector that reported the event.

11.2. Access to Main menu

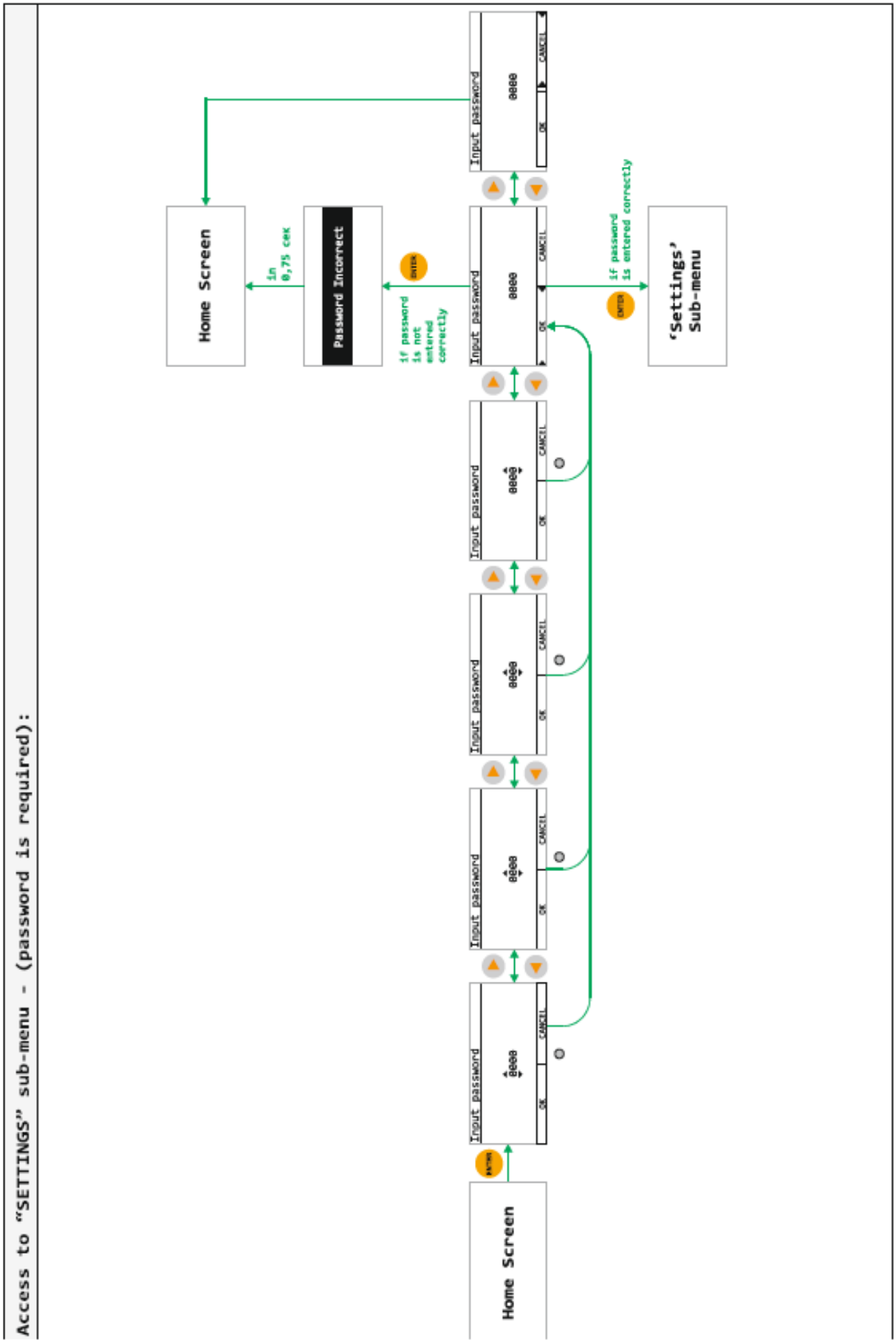


11.3.System Information sub-menu

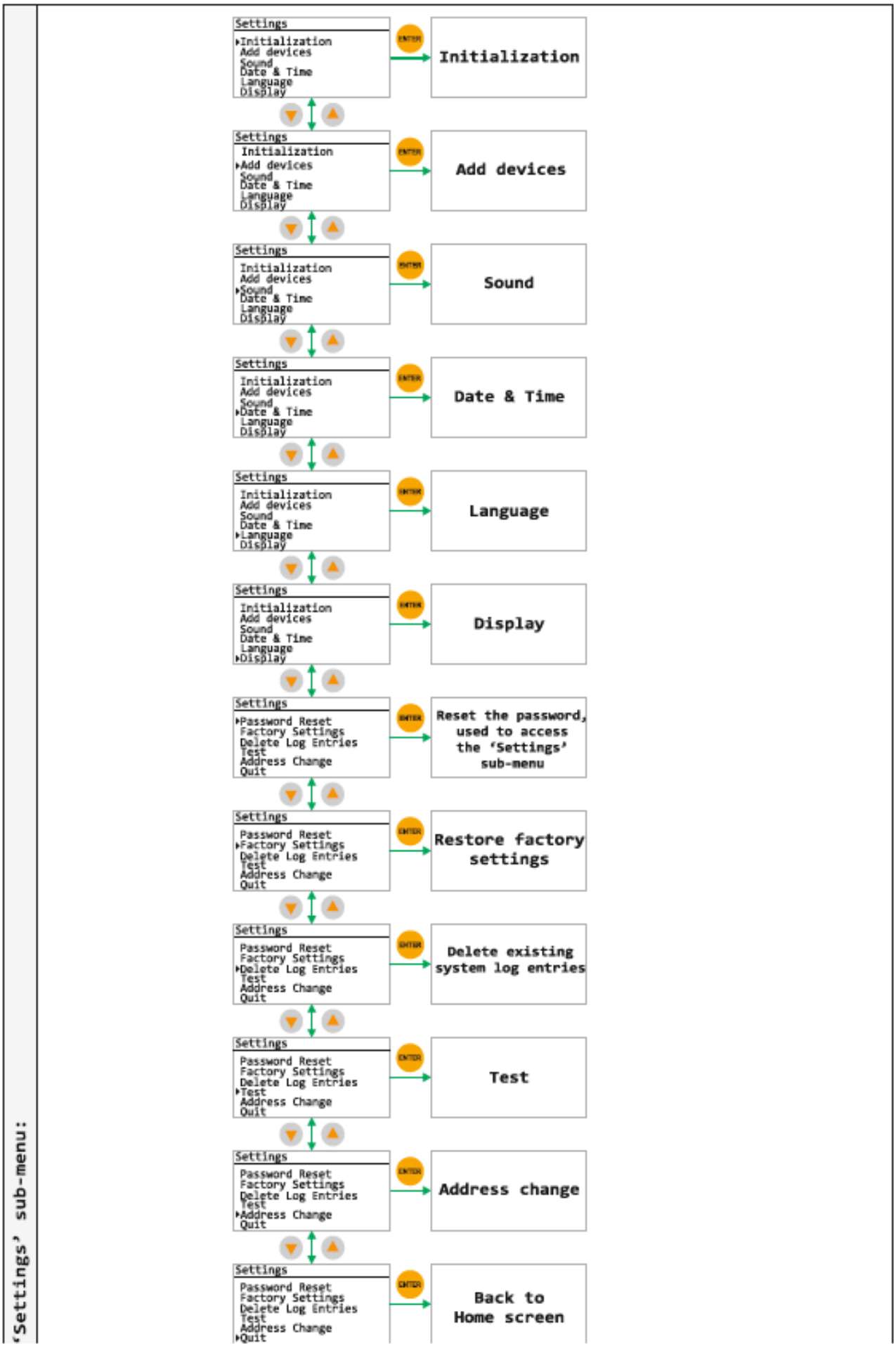
System Information:



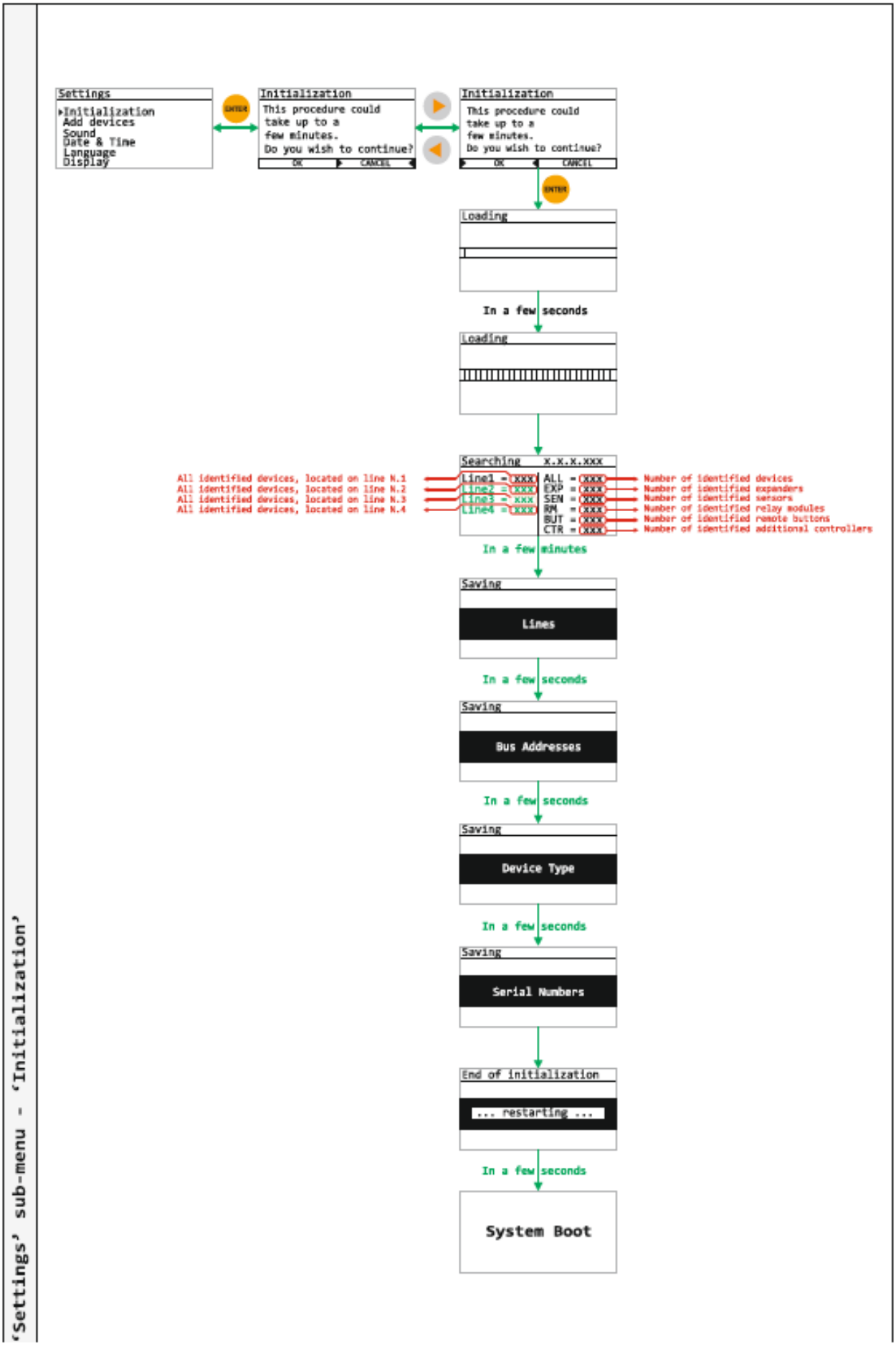
11.4.Settings sub-menu – entering the password



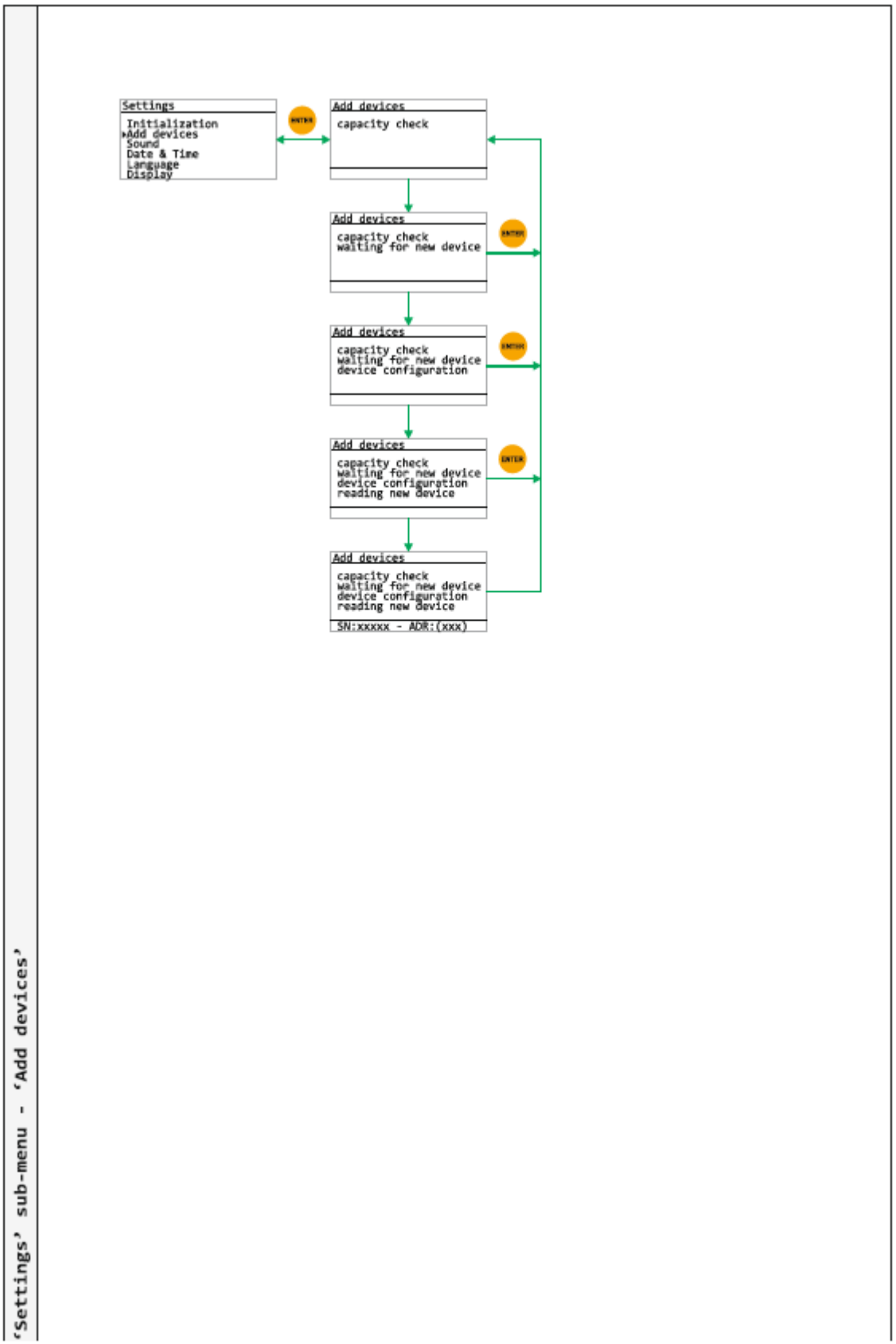
11.5.Settings sub-menu - options



11.6.‘Settings’ sub-menu - ‘Initialization’

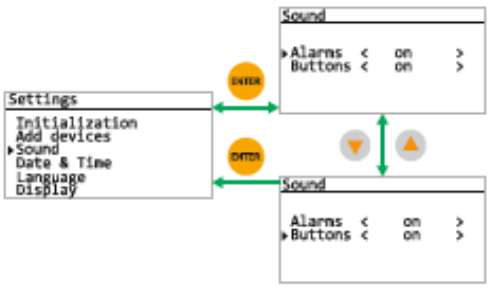


11.7.‘Settings’ sub-menu - ‘Add devices’



11.8.‘Settings’ sub-menu - ‘Sound’

‘Settings’ sub-menu - ‘Sound’

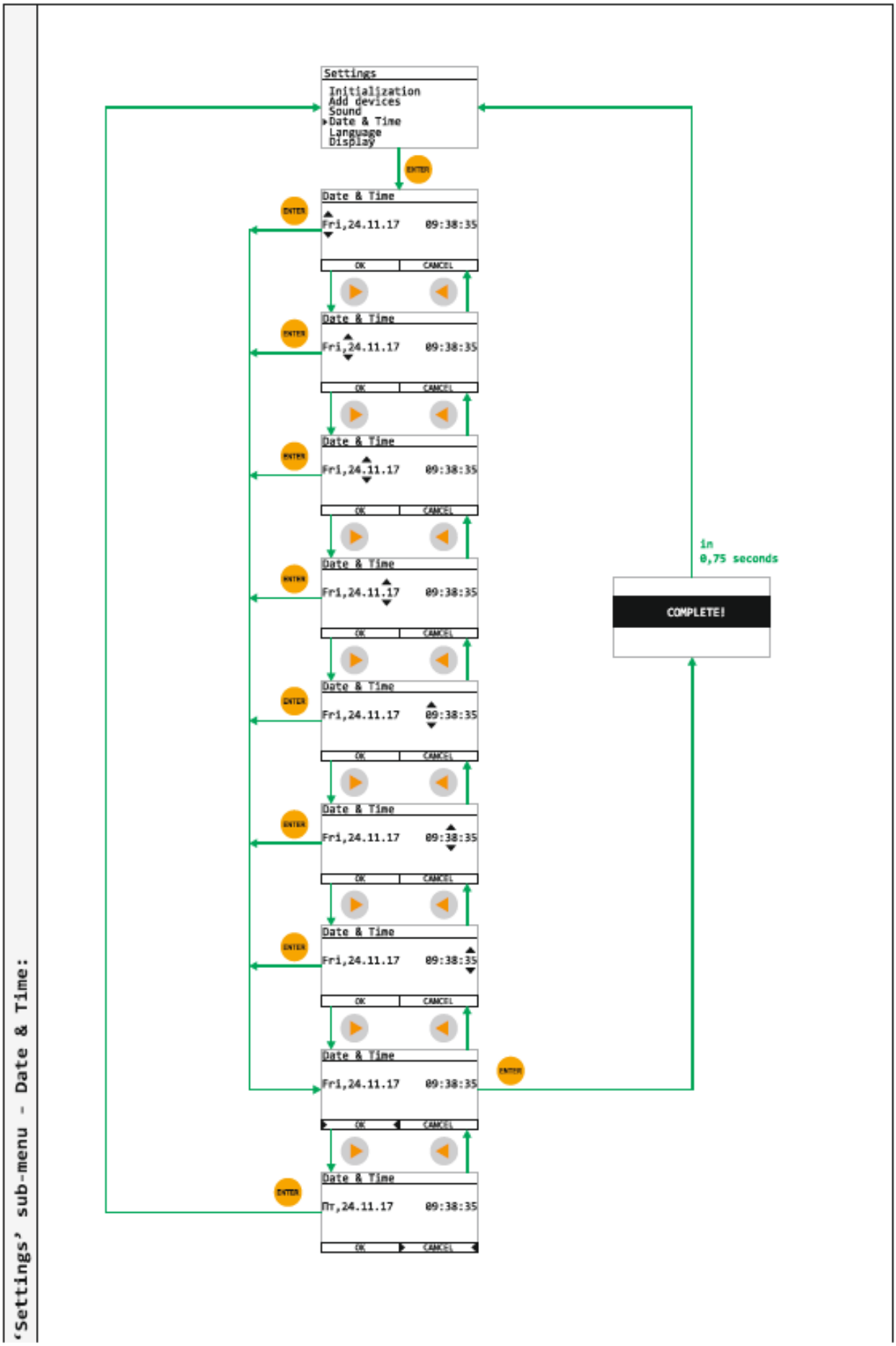


Toggling alarm sound:

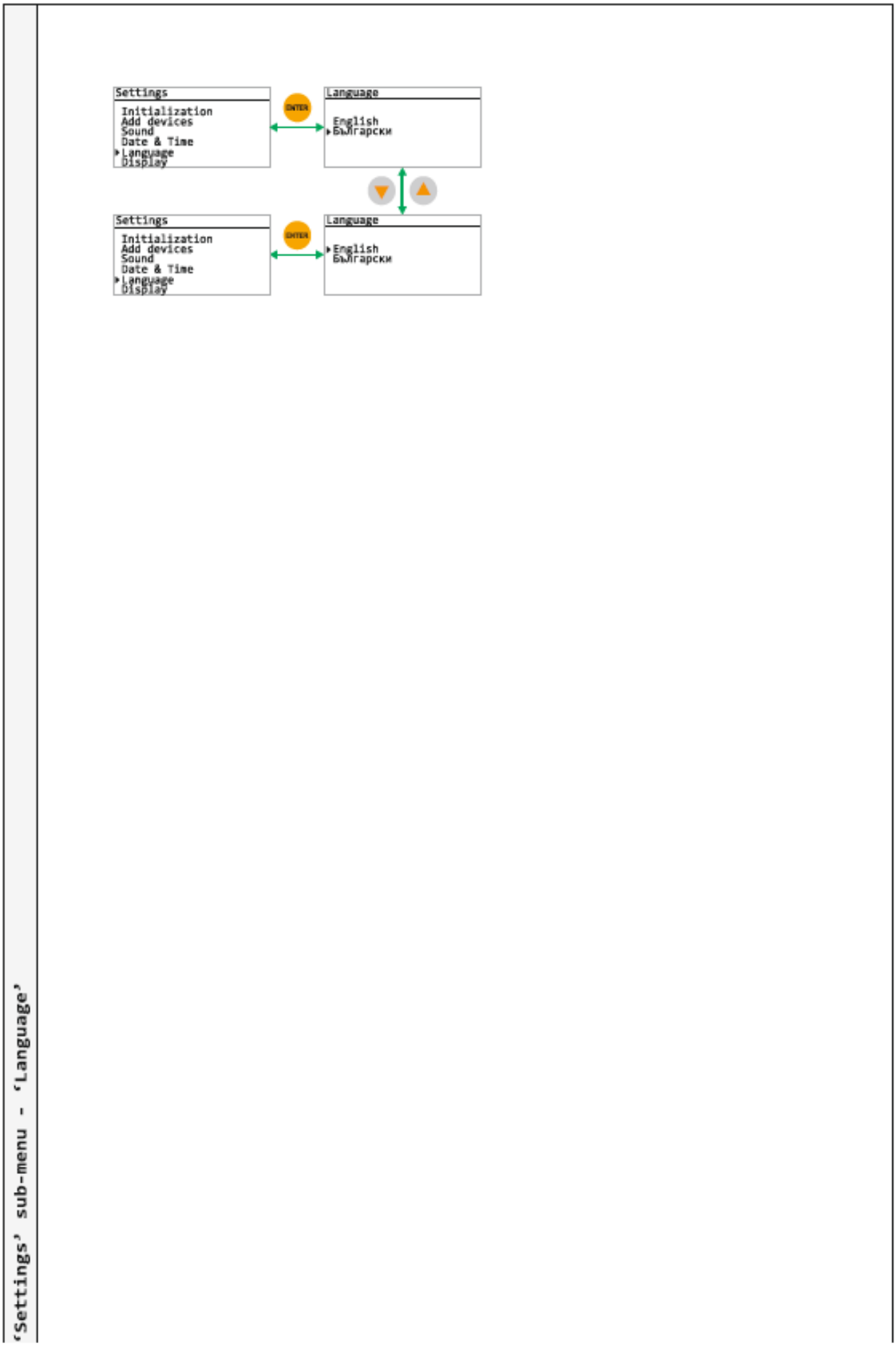
Toggling button sound:

‘Settings’ sub-menu - ‘Sound’

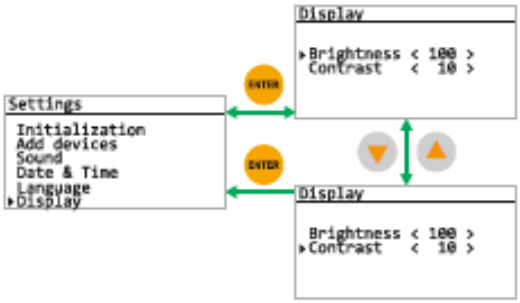
11.9.‘Settings’ sub-menu - Date & Time



11.10.‘Settings’ sub-menu - ‘Language’



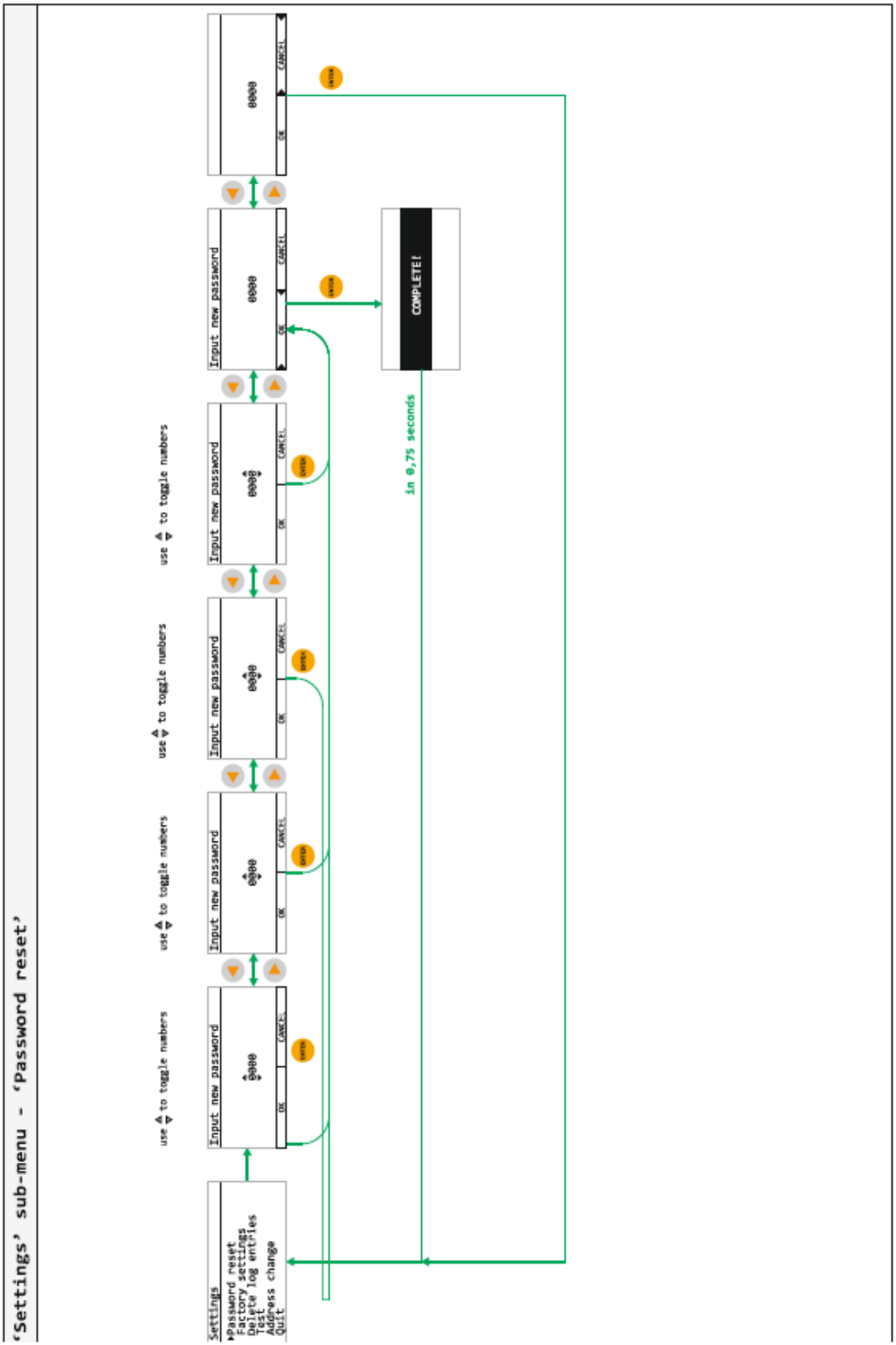
11.11.‘Settings’ sub-menu - ‘Display’



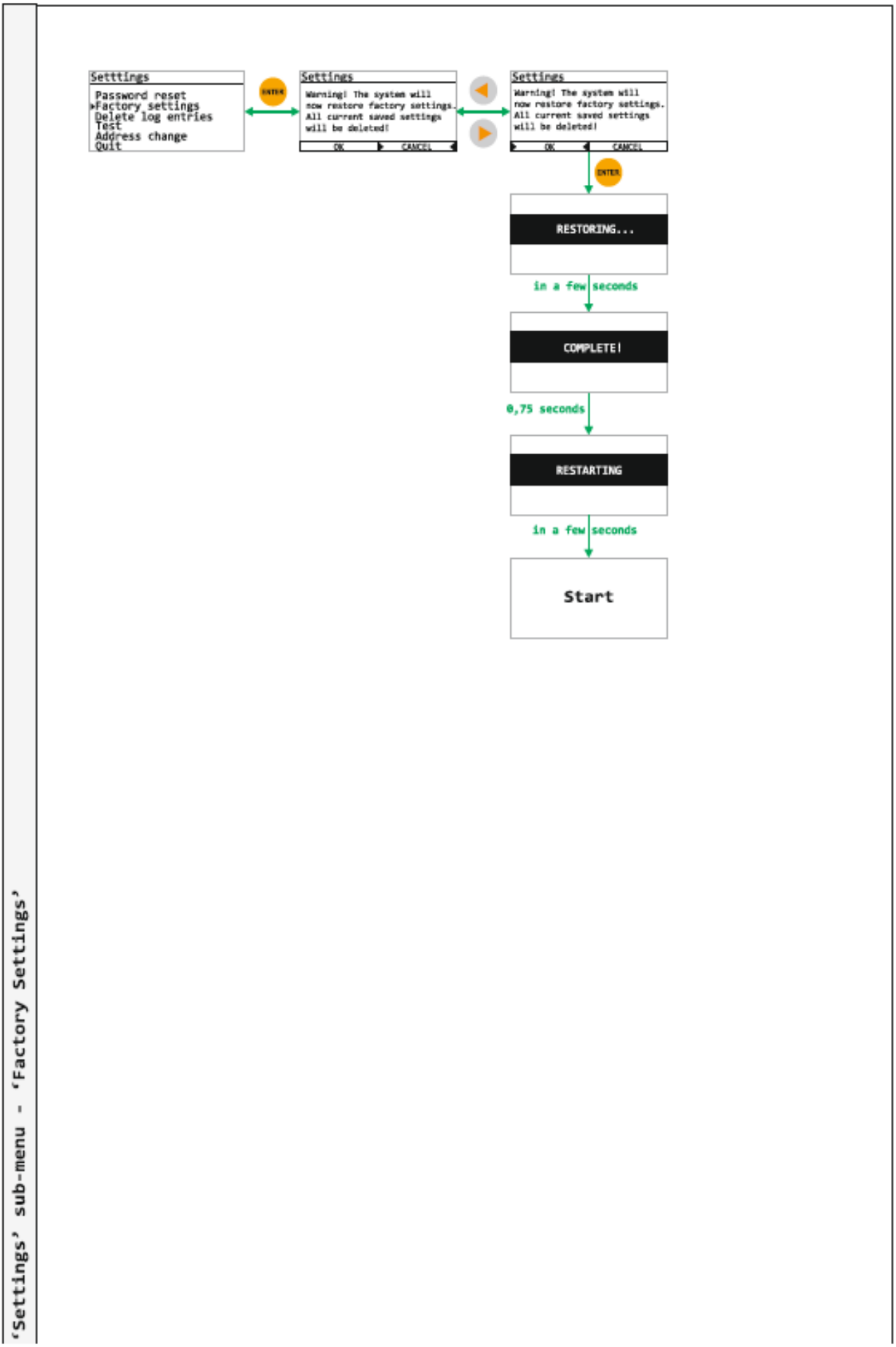
Changing the brightness of the display:

Changing the contrast of the display:

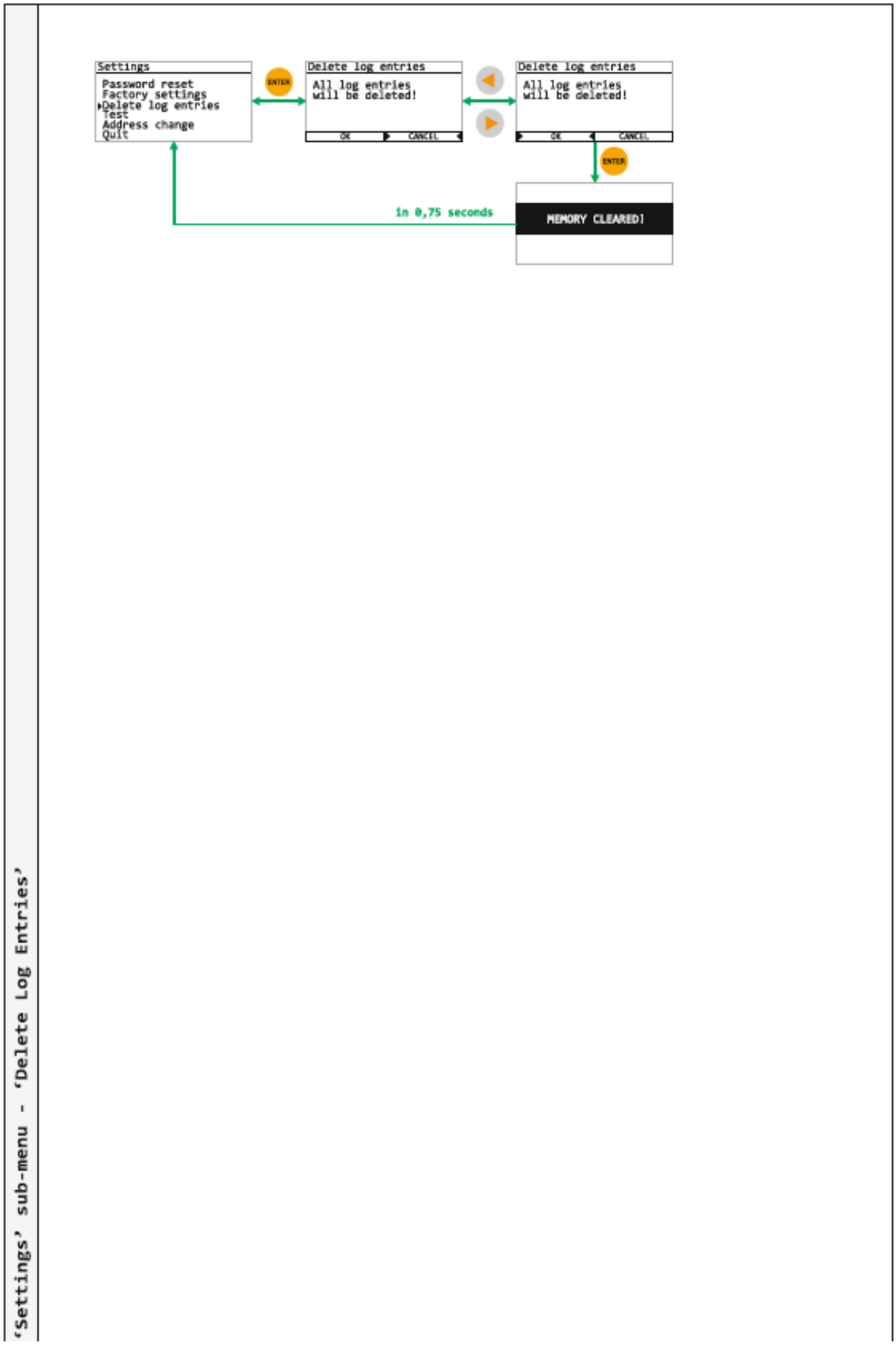
11.12.‘Settings’ sub-menu - ‘Password reset’



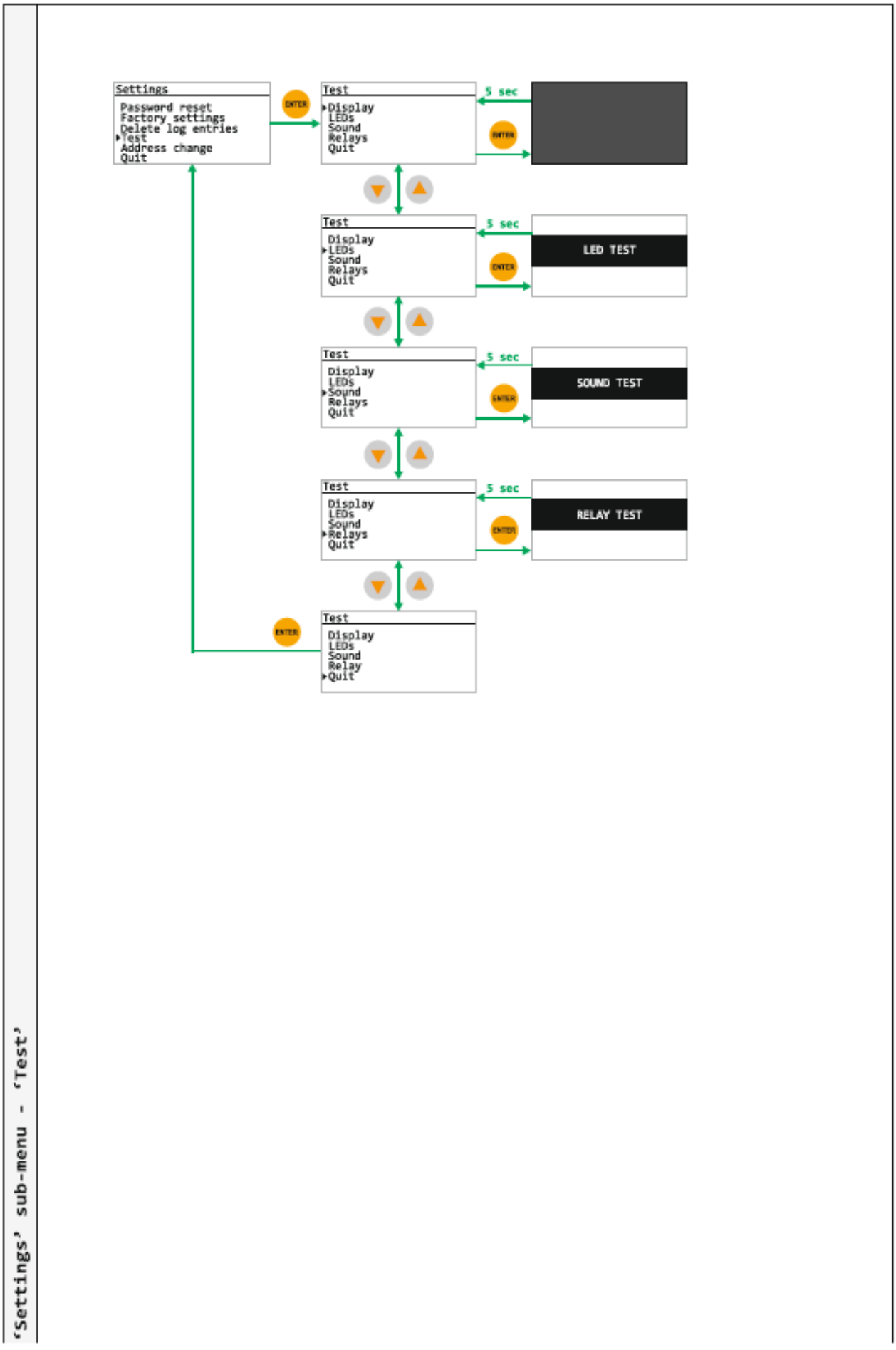
11.13.‘Settings’ sub-menu - ‘Factory Settings’



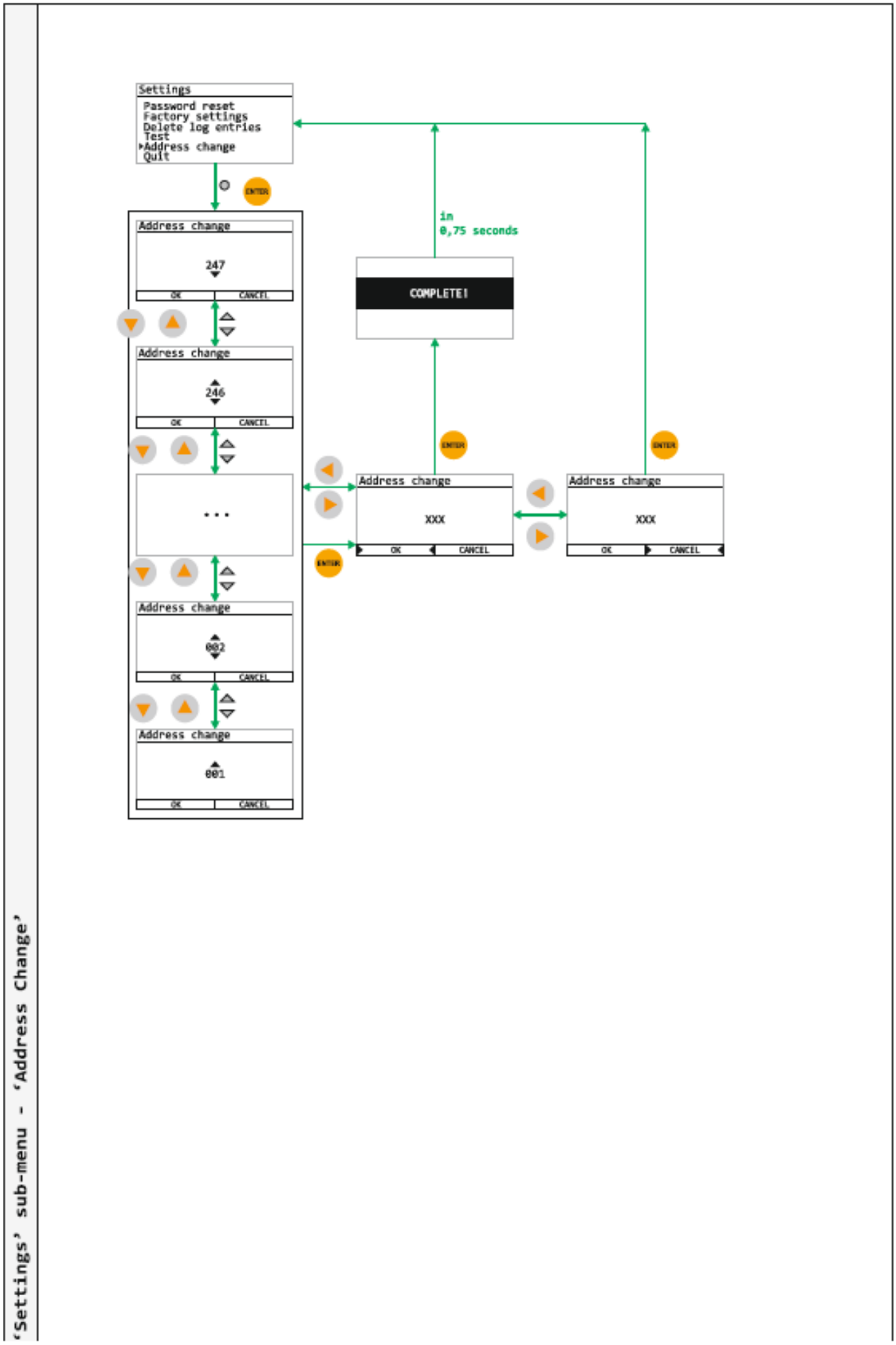
11.14.‘Settings’ sub-menu - ‘Delete Log Entries’



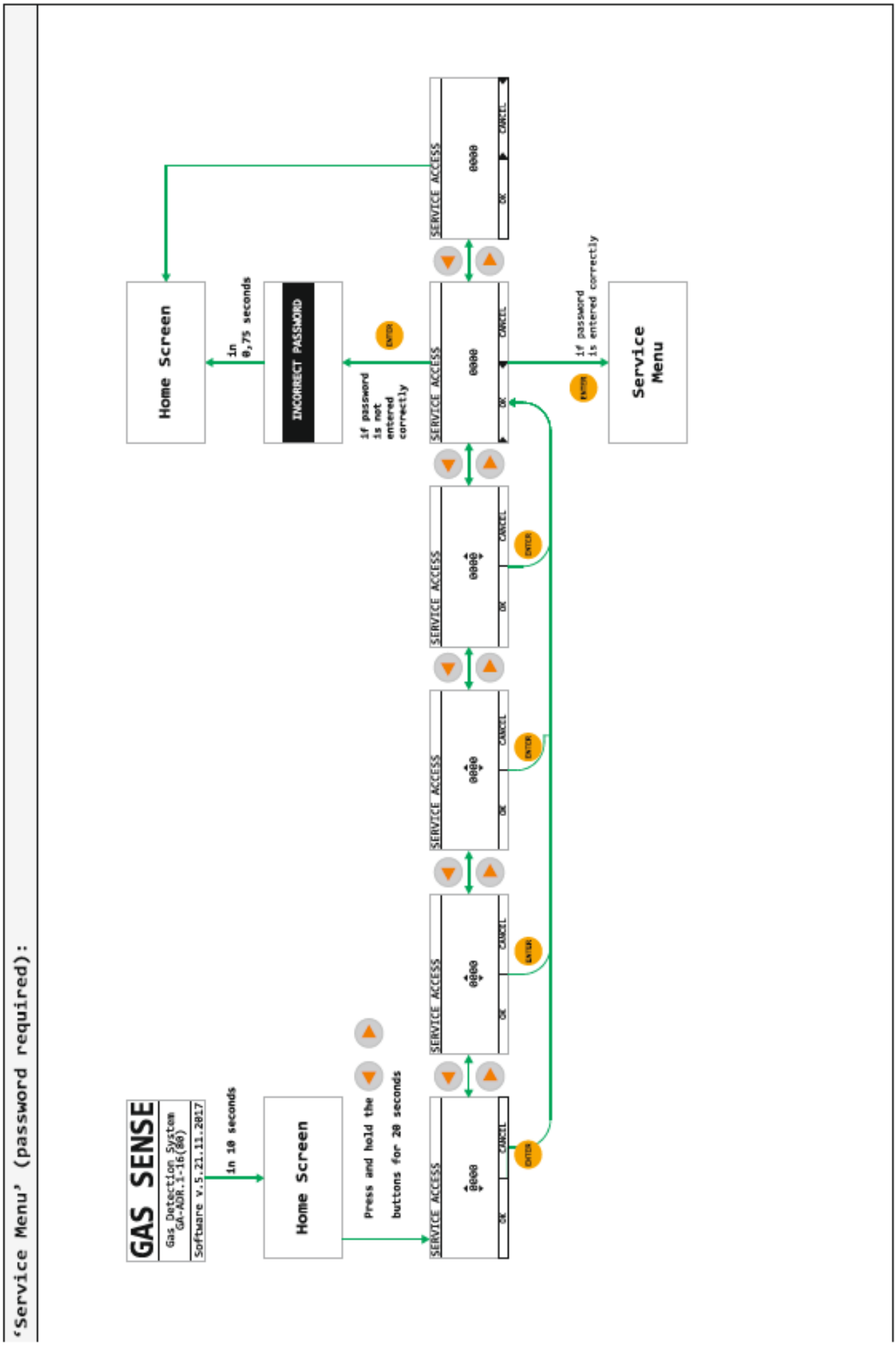
11.15.‘Settings’ sub-menu - ‘Test’



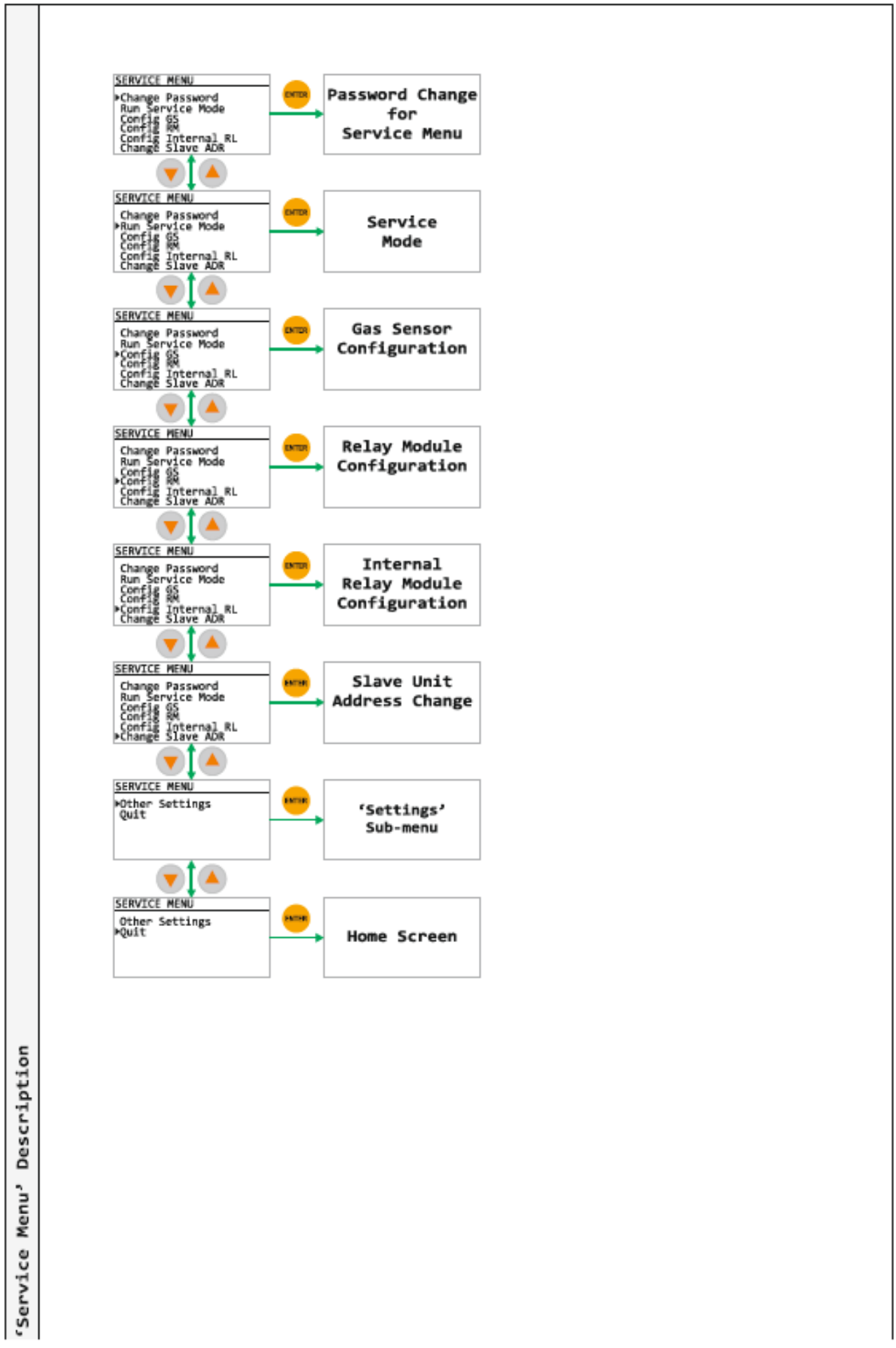
11.16.‘Settings’ sub-menu - ‘Address Change’



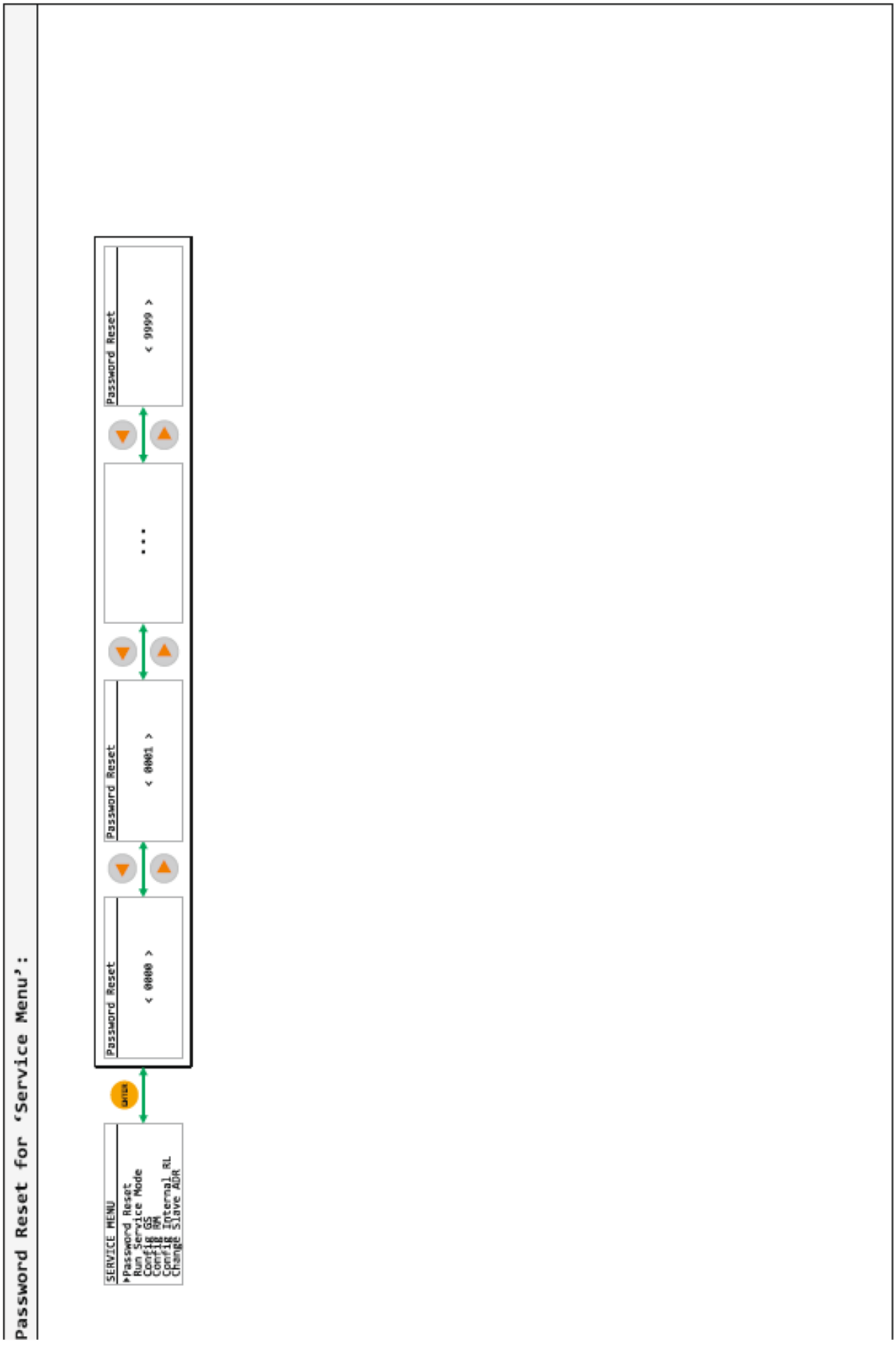
11.17.‘Service Menu’ – entering the password



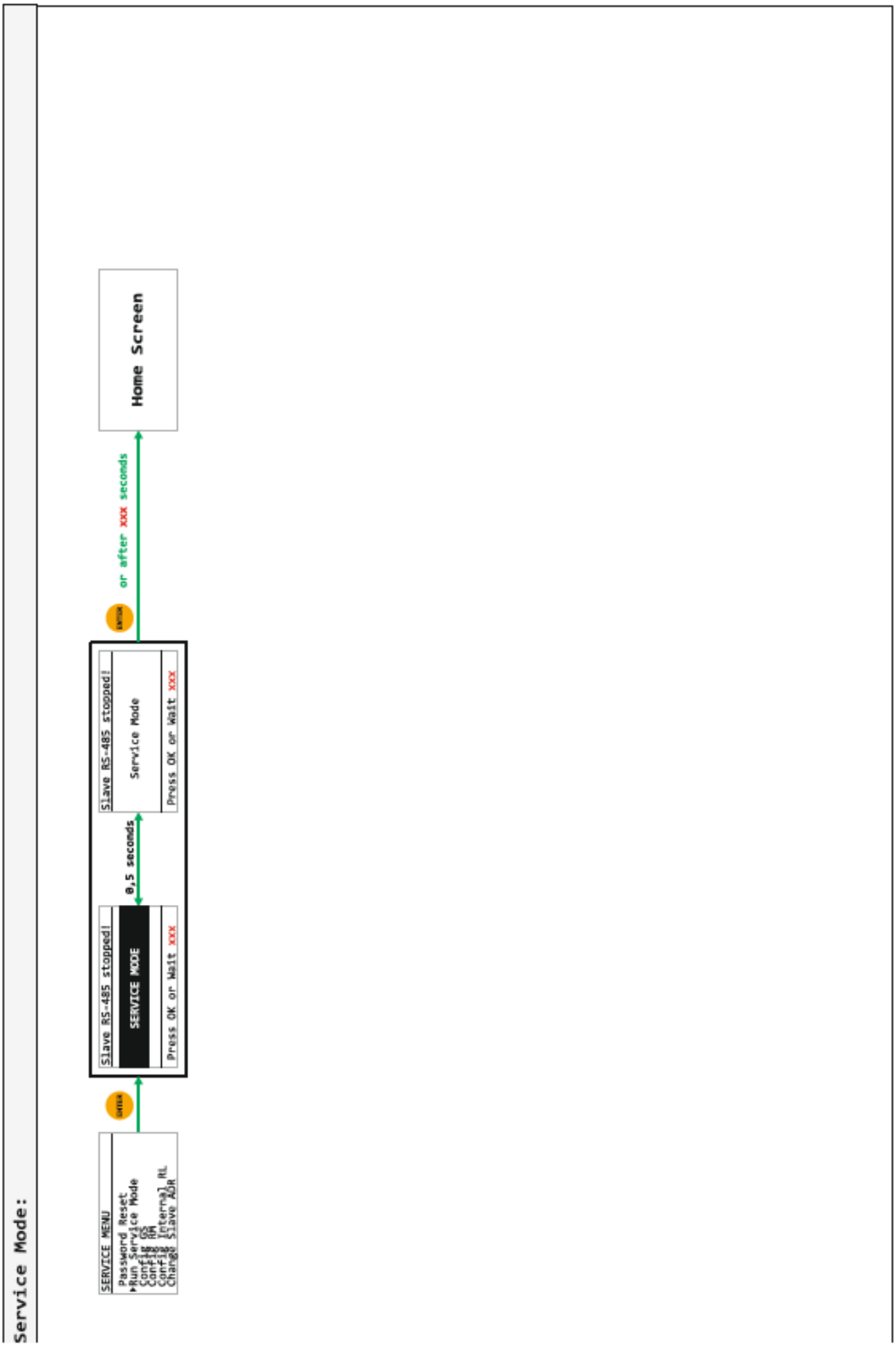
11.18.‘Service Menu’ Description



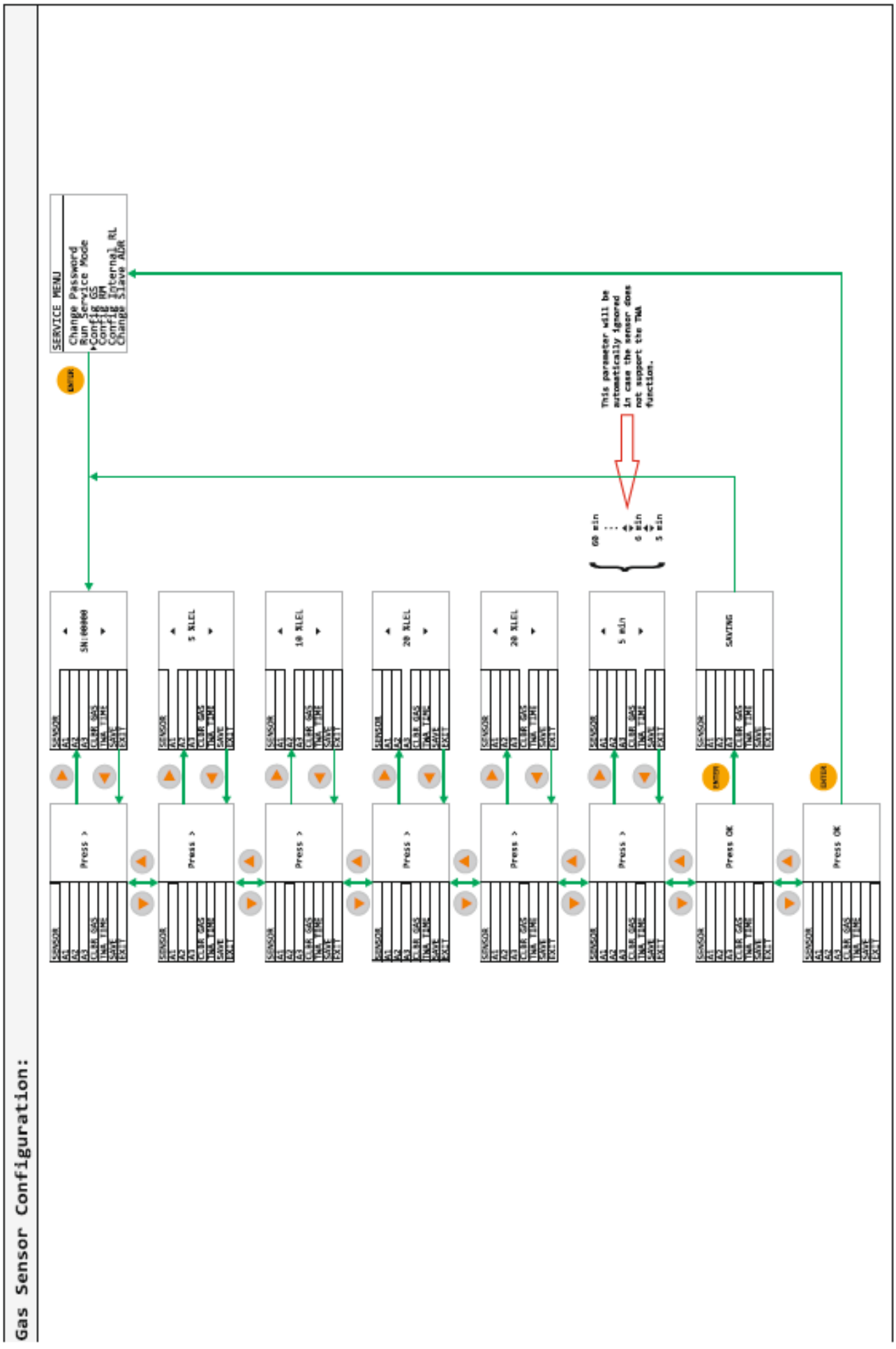
11.19.Password Reset for ‘Service Menu’



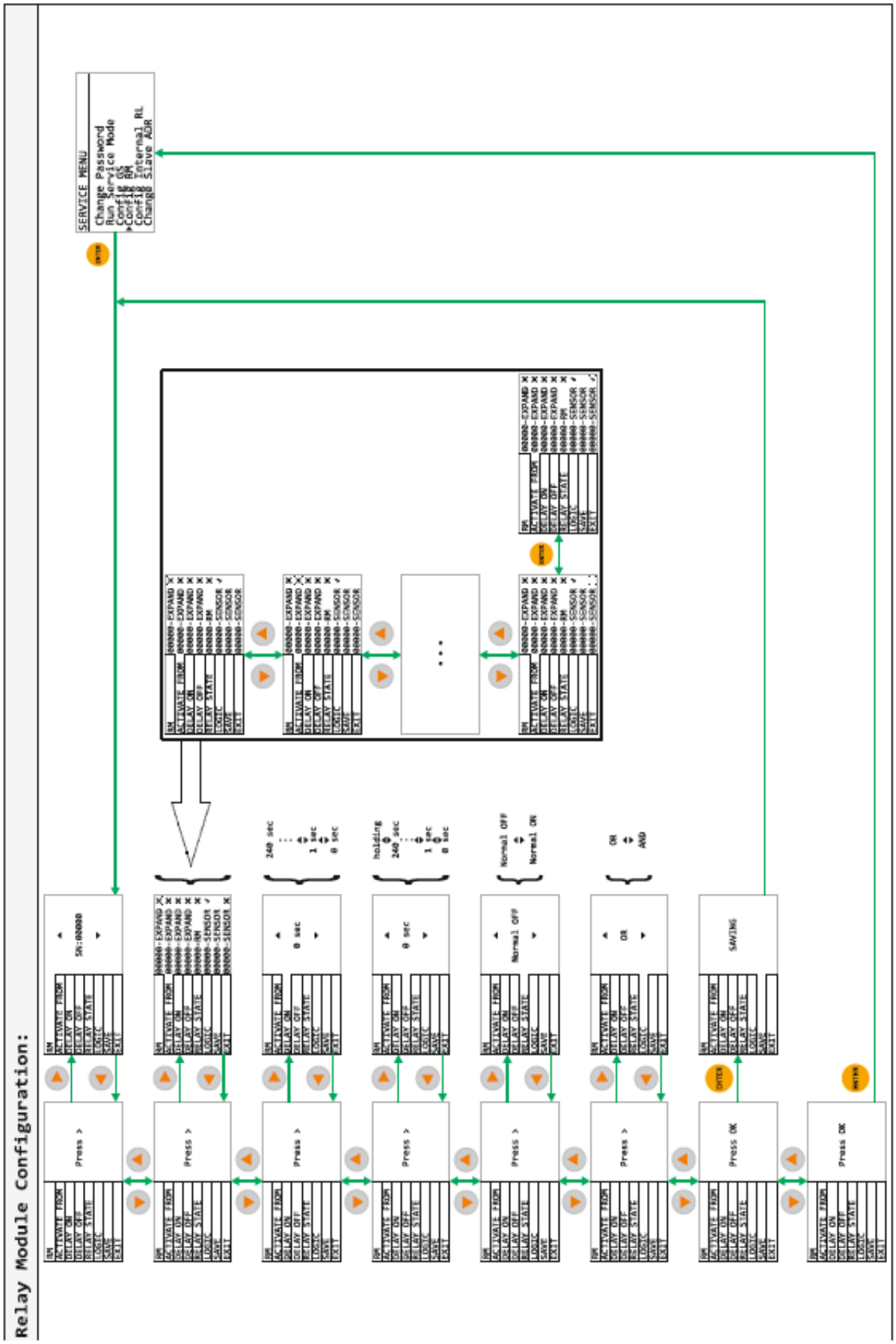
11.20. Service Mode



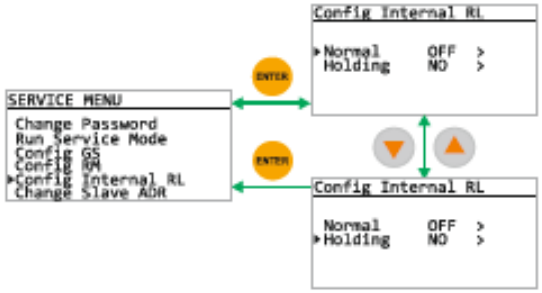
11.21.Gas Detector Configuration



11.22.Relay Module Configuration



Internal Relay Module Configuration:

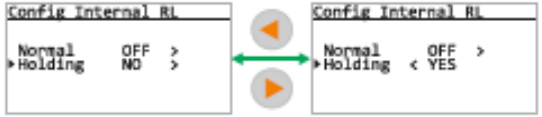


Changing the normal mode of internal relay units (normally on / normally off):

The internal relays are normally off.

The internal relays are normally on.

Changing the setting for deactivation of the internal relay units (automatic / manual):



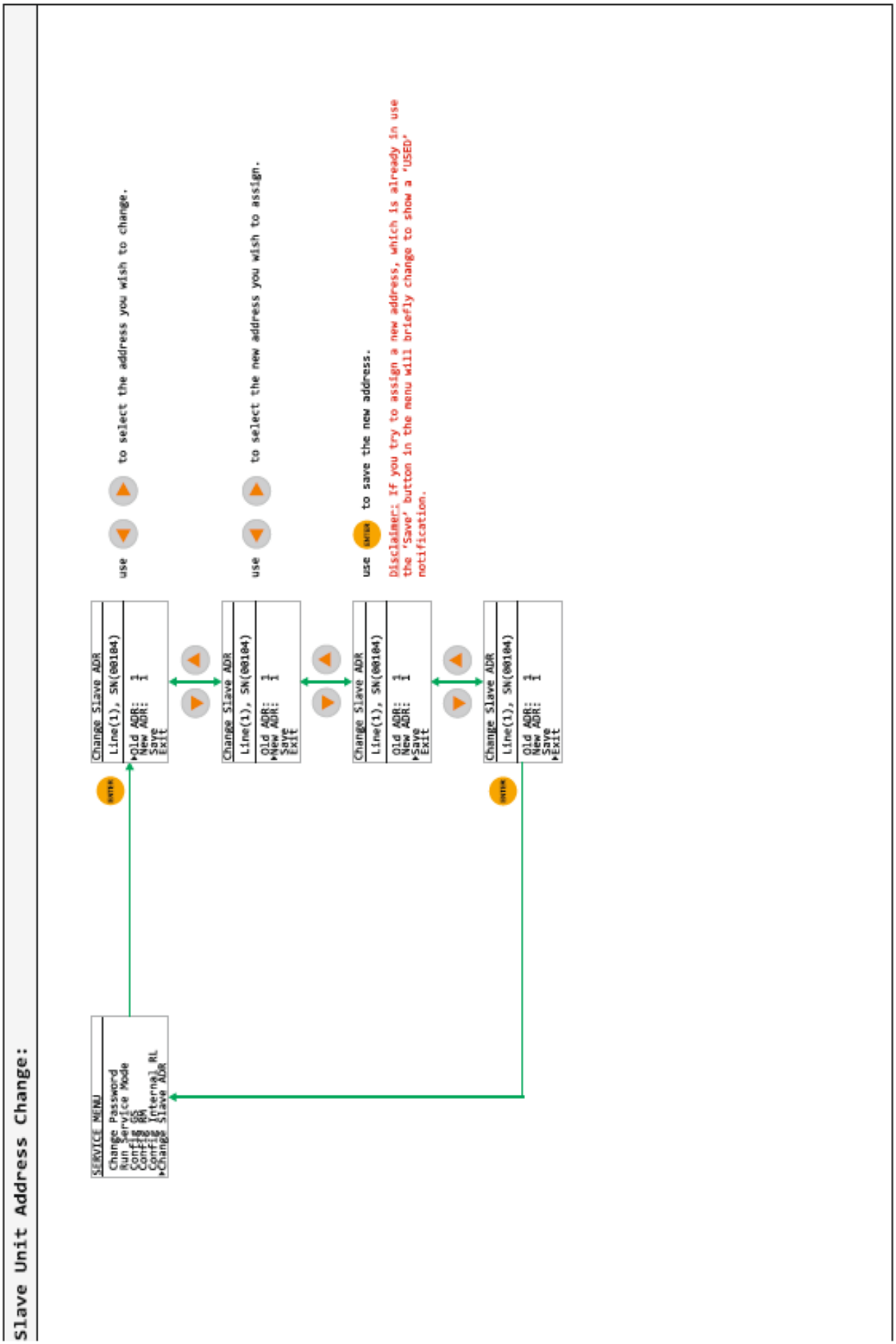
automatic deactivation

Once the issues that caused the unit to enter Alarm mode have been resolved, the relays will automatically return to normal operation mode.

manual deactivation

Once the issues that caused the unit to enter Alarm mode have been resolved, the relays will remain engaged until they are manually reset.

11.24.Slave Unit Address Change



12. Maintenance and servicing

Cleaning
If necessary, clean the exterior of the enclosure with a damp cloth. Do not use alcohol or ammonia based liquids to clean the controller.

Servicing
We recommend that the user periodically inspect the proper triggering of alarm and fault relays, the buzzer and indications on the front panel of the controller. Test must me done by applying etalone gas mixture to the gas detectors.

The adjustment operations of the gas detection system must be done only by authorized, trained personnel because they may compromise gas detection detection system reliability.

Servicing frequency
It is recommends regular testing of fixed gas detection installations. The type of test consists of injecting a standard gas mixture of sufficient concentration into the sensor to set off the preadjusted alarms. This test does not, replace a full calibration of the detector. Frequency of gas testing depends on the industrial application in which the sensors are used. Inspection should be done frequently during the first months after installation start up, later it may be spaced out if no problem is observed.
If a detector does not react upon contact with gas, it must be calibrated. The frequency of calibration will depend on tests (humidity, temperature, dust, etc.); calibration should occur at least once every year. We also recommend calibrating the detector after exposure to high gas concentrations. The site manager is responsible for implementing the safety procedures on his site. Invest Electronics is not responsible for implementing safety procedures.

13. Ordering information

Addressable gas controllers GA-ADR for DIN rail mounting

Model – ordering code	Number of slave devices	Power supply
SKU554470	16	24VDC
SKU554471	32	24VDC

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