



ALARM CONTROL UNIT FOR
FLAMMABLE GASES

INSTRUCTION MANUAL



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1 GENERAL REMARKS

1.1 Responsibilities - guarantees

The installer is required to respect **CE** standards and installation provisions.

The installation must be conducted by qualified personnel.

All our equipment is tested and inspected in our workshops before shipping.

This manual must be read carefully by anyone who is or will be responsible for the installation, use and/or maintenance of this equipment. The guarantee offered by **DALEMANS sa/nv** will be void if this equipment is not installed, used, and maintained in compliance with these instructions, warnings, and limits of use.

By following these instructions, you guarantee the proper working of the equipment. Please contact **DALEMANS sa/nv** for any information about the use or maintenance of this product.

ONLY use original **DALEMANS sa/nv** parts when performing maintenance on the equipment as described in this manual. Otherwise, you may seriously alter the equipment's performance.

Any repair or maintenance performed without respecting the procedures described in this manual or without help from our after-sales service may prevent the equipment from working correctly and, as a result, prevent guaranteeing the safety of the occupants of the building and installations.

This equipment must be installed indoors, in a clean and dry area. Please use a screen (box) to avoid any projections of water or polluting agents. Do not hesitate to contact **DALEMANS sa/nv** for any additional information concerning the use of maintenance of this product.

DALEMANS sa/nv cannot be held responsible for any direct or indirect damage as well as any direct and indirect monetary damages resulting from the failure to comply with these guidelines.




DALEMANS sa/nv guarantees that this product is free from manufacturing defects and agrees, at its sole discretion, to repair or replace any component which is defective or likely to become so in the context of normal use during the warranty period specified in the general terms of sale.


This guarantee does not cover elements such as batteries, fuses or any other component provided by a third party.

Claims concerning the **DALEMANS sa/nv** product guarantee must be made in the guarantee period specified above and within five calendar days of the discovery of the problem. Please contact your **DALEMANS sa/nv** after-sales service to register your claim.

For any additional information, please refer to **DALEMANS sa/nv** general conditions available on request.

1.2 Safety information

Symbol	Description
	Protective ground terminal
	Warning: risk of electric shock
	Warning: refer to instruction manual

 Do not open the equipment without disconnecting the mains power supply first!

The installation and commissioning of U•H1 control unit must be performed by qualified personnel only. Qualified personnel are trained and accredited by **DALEMANS sa/nv**. During installation, refer to the standards in application.

Should the equipment be installed or used in a manner not specified by **DALEMANS sa/nv**, the protection provided by the equipment may be impaired.

Modification, disassembling and total or partial destruction of this equipment may invalidate the essential safety requirements of the whole plant.

For commissioning, please contact **DALEMANS sa/nv** to arrange an appointment.

1.3 Environment



The presence of the crossed-out wheellie bin logo on this product means that you are required to respect the regulations in force concerning the collection and recycling of waste electrical and electronic waste.

These provisions aim to preserve the natural resources used to produce this product and to avoid the dispersal of substances which are potentially harmful to the environment and human health.

Once this product reaches the end of its life, you **MUST** discard it by taking it to an approved collection center for the recycling of electrical and electronic equipment.

For more information on collection and recycling centers in your region, please contact your local or regional administration.

1.4 Device targeted by the document

This document has been redacted specifically for U•H1 gas detection control unit (reference 01253) in its V2 version. The version of the associated firmware is v3.03.

Device	Reference	Device version	Firmware version
CENTRAL U•H1	00410	V2R0	v2.02

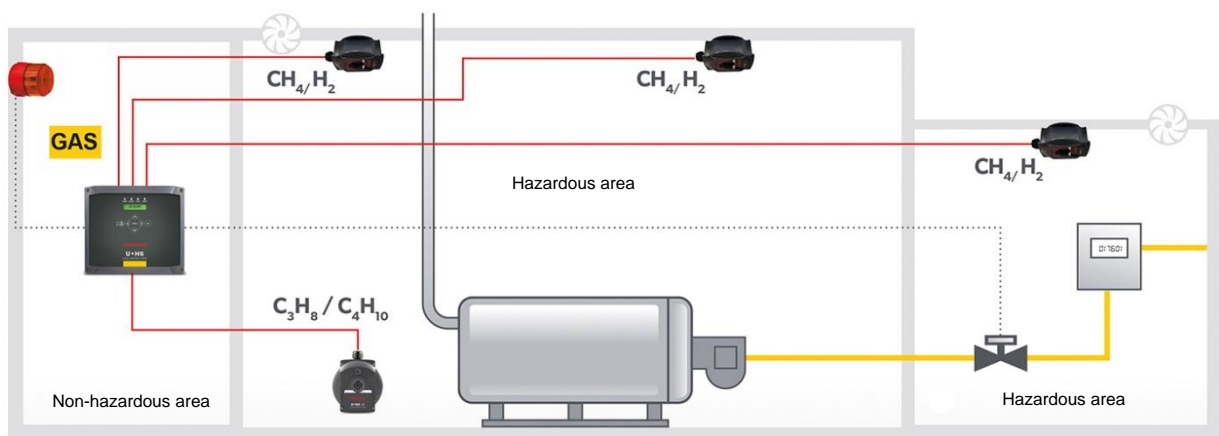
For all information on the installation, use and configuration of a U•H1 in V1 version, please refer to the U•H1 instruction manual in its V1 version.

1.5 Operating principle

The U•H1 is a fixed device for automatic alarm management related to explosive gas detection. The D-TEX 3F+ detector is a fixed device that continuously transmits a signal to the U•H1 control unit proportional to the concentration of gas detected in the air.

Before the LEL¹ of the observed gas is reached in the atmosphere, this electronic control unit has the possibility to act on safety equipment such as:

- the closure of a gas valve,
- the cut-off of the electrical current,
- the triggering of an alarm.



⚠ It is strongly recommended to place the control unit outside the zone being protected!

Two adjustable alarm thresholds are respectively associated with the actions on the relays. These are relays controlling the safety equipment connected thereto.

A U•H1 control unit output specifically adapted for the connection of a sounder, or a flash lamp is automatically activated in case of alarm. At any time, it may be reset from the U•H1 control unit. The U•H1 control unit also has internal fault management. Once detected, any abnormal operation of a detector or the control unit is indicated by an action on the relay signaling the technical fault. This function guarantees the reliability of gas detection.

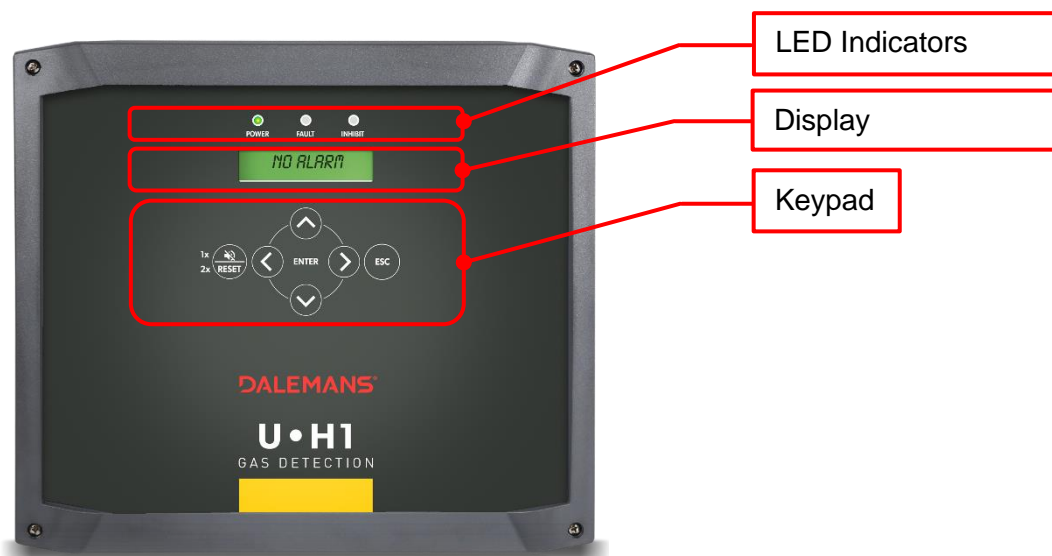
¹ LEL: Lower explosive limit: the concentration from which an air/gas mix becomes hazardous.

The U•H1 unit also has internal fault management. Notification is sent via a relay signaling a technical fault once any unusual use of the unit or a detector is detected. This function thus ensures the reliability of the gas-detection system installed.

The status of the U•H1 unit and the triggering of each of the functions presented may be viewed via the front panel of the unit at any point in time:

- The display has a backlight that varies in color depending on the status of the U•H1 unit and shows a message explaining the status.
- There is a set of color LEDs.
- There is a resettable buzzer which is triggered when the fault or alarm functions are triggered.

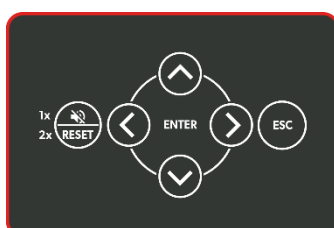
1.6 Display interface






1.6.1 LED indicators

LED indicators	
« Power » LED	The control unit is powered on
« Fault » LED	There is at least one active fault condition.
« Inhibit » LED	The control unit is in a special state: gas concentration measurements and alarm management are still running; the alarm statuses are not updated. This mode automatically exits after 15min without any user interaction.

1.6.2 Keypad



	Allows the user to move around a menu or a selection
	Allows the user to enter a sub-menu or launch the action associated with the menu item selected
	Allows the user to exit a sub-menu and return to the parent menu
ENTER	Allows the user to enter configuration mode, to confirm a change of settings or to launch the action associated with the menu item selected
ESC	Allows the user to exit the configuration menus entirely or cancel the modification of the settings in progress and return to the parent menu
RESET 1 x	Allows the user to turn off the buzzer and the siren output
RESET 2 x	Allows the user to do the following: - reset an alarm, on the condition that the alarm is no longer active - reset the faults for which there are still notifications, but which are no longer valid.

1.6.3 Display

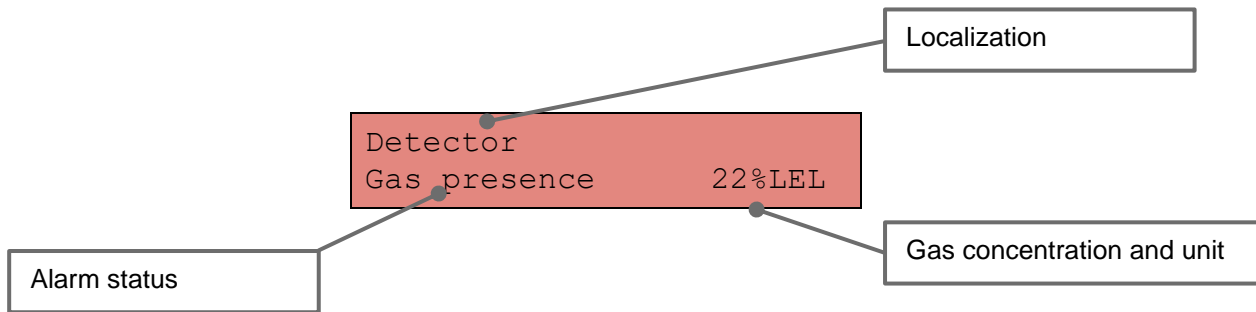
The status of the U•H1 unit is indicated by the **messages** on the display and the color of the backlighting.

Backlighting	Off	Green	Yellow	Red
Mode	Standby	No Alarm	Maintenance	Alarm
Message	Looped Display: <ul style="list-style-type: none"> • No Alarm indicates that there are no active alarms. • Maintenance Date: Next Maintenance • Gas Concentration Values for the detector. 		Maintenance interval exceeded: Maintenance required. Technical Fault Looped Display: <ul style="list-style-type: none"> • List of faults and technical faults 	Looped display of the alarms that have been triggered. The highest alarm level per type of gas monitored is displayed. The ID of the detector, the alarm level and the gas concentration measured is shown for each of the alarms displayed.

- ❗ Only alarm messages are displayed when an alarm has been triggered, so any messages associated with technical faults are no longer shown.
- ❗ The display's backlighting goes into sleep mode after 60 seconds. As soon as the keypad is used, as soon as an alarm is detected or as soon as a technical fault appears, the U•H1 control unit goes out after sleep mode.

a) Alarm mode (gas detected)

The unit enters alarm mode when one or more alarm conditions have been met. The screen turns RED, indicating the alarm level of the highest active alarm.



The system can only exit alarm mode when all the alarm conditions have been reset.

b) Fault mode

The system can enter back-up mode when no alarm conditions have been met, but one or several fault conditions have been.

Detector 2
Sensor error

c) Normal mode

Normal mode is reached if, and only if, the following conditions have been met:

- No alarm conditions have been met.
- There are no faults.

In such a case, the screen is GREEN and states 'No alarm':

No alarm

d) Standby mode

When there are no gas alarms or fault messages, the backlighting of the display enters standby mode after 60 seconds.

The system automatically exits standby mode when one of the following occurs:

- keyboard action
- detection of an alarm
- appearance of a technical fault

2 INSTALLATION

2.1 Precautions for use

For your safety, ensure that you are working **on a device that is powered off** before you do anything!

- ⚠ The housing of the U•H1 unit may only be opened by qualified technicians.
- ⚠ The U•H1 unit must be placed in a room that does not have an explosive atmosphere and must always be easy to access.

The housing of the U•H1 unit can be inverted. It can be used in such a way that electric cables can be inserted from the top, or in such a way that they can be inserted from the bottom. However, to guarantee optimal sealing, it is recommended that you always insert the cables from the bottom.

The housing of the device is **IP65**-certified and is therefore protected against the presence of dust and water, provided that the installation instructions are followed.

The housing has several machined apertures. You will need to clear these machined apertures with a flat screwdriver and hammer to insert the cable glands.

- ⚠ Before drilling these holes with a tool, it may be useful to remove the electronic part to avoid accidental damage.

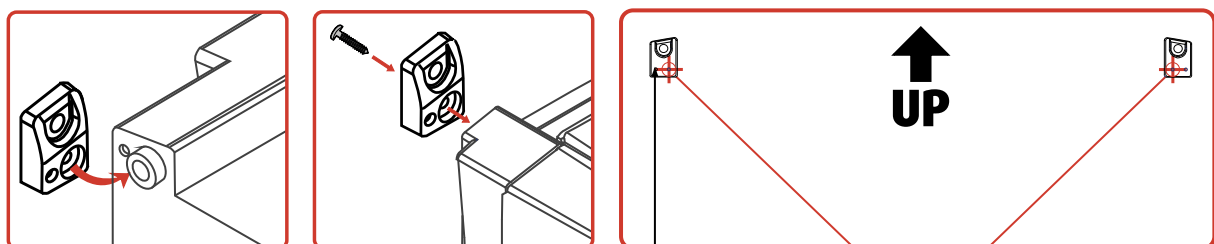
⚠ Important note:

Never place the U•H1 control unit, the siren, and the detector cables in the vicinity of:

- a high-voltage cables or a power cable,
- coaxial cables or transmitters,
- welding stations or frequency regulators.

2.2 Placing the U•H1 unit

The U•H1 unit must be placed on a smooth, flat surface. Two fixing systems, a drilling plan and a quick installation guide are supplied with the device. You can choose to fix the unit using the housing or the four feet provided.



It is also possible to fix the U•H1 unit on a DIN rail (optional). Please contact your **DALEMANS sa/nv** representative for more information.

If you choose to fix the device without using the feet, attach the housing via the four holes provided for this purpose to the four corners of the housing using a PZ2 screwdriver that is at least 150 mm long.

See the quick installation guide provided for the different steps.

2.3 Connecting the control unit

The unit must be installed, and the electrical connections hooked up by a qualified technician, in accordance with the instructions given in this manual and on the diagram on the back of the cover of the U•H1 unit.

⚠ A circuit breaker (2 pins, 6A, 250V (AC)) must be placed on the live and the neutral. See the wiring example below.

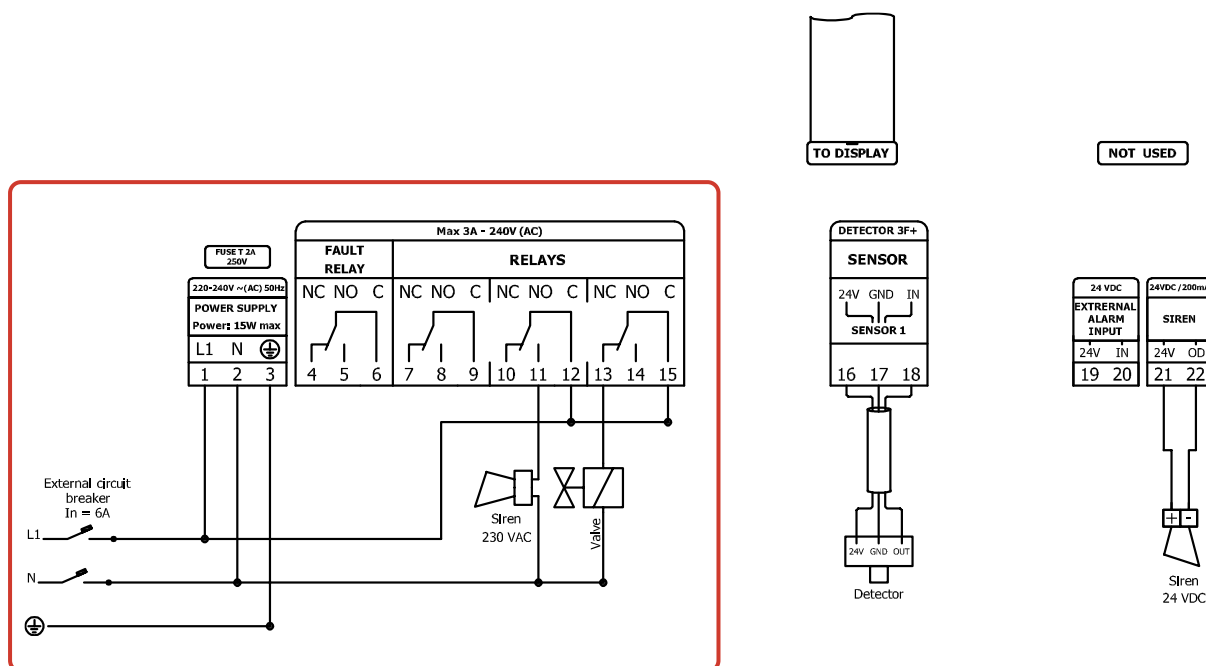
It is recommended that the circuit breaker to be in the vicinity of the equipment.

Any installation must comply with the applicable local standards and regulations, as they pertain to the type of cable and the cross-sectional area of the wires to be used.

Ensure that the wires are securely connected to the connectors when connecting the electrical terminals. Use a maximum torque of 0.60 Nm. To ensure electrical safety, the wires that go from the cable glands on the housing to the terminals on the board must not be longer than 70 mm.

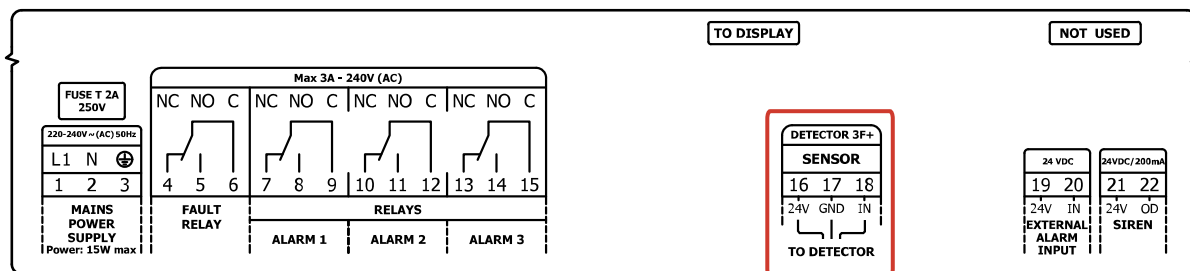
It is recommended that you always use wires with crimp ends to avoid any risk of bad electrical contact.

Example Connection Diagram for the U•H1 Unit:



2.4 Connecting the detector

It is recommended to use a stranded, 3 wire cable with a conductor cross section from 0.75 to 1.5mm².



The terminals coming from each detector must be connected to the U•H1 unit in the following order:

Detector terminals (Version V1R3)	CU Terminals (Version V2Rx)	Detector terminals (Version V1Rx)	CU Terminals (Version V1Rx)
V+	V+	24V	24V
V-	V-	GND	GND
S	S	OUT	IN

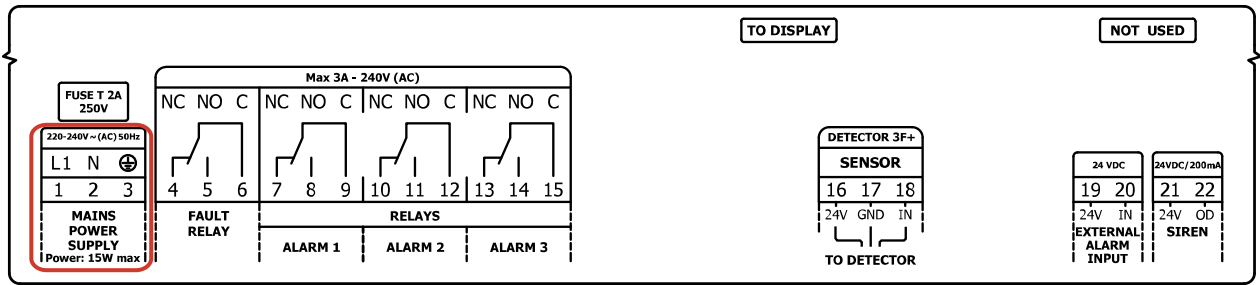
Current marking of electronic boards Former marking of electronic boards

- ❗ The cables that connect the detector and the U•H1 unit should not be more than 300 m long.
- ❗ If the U•H1 unit is installed in an environment that contains sources of strong electromagnetic interference (transmitters, welding stations, switching relays, HF transmitters, cable runs or computer networks, etc.), it is preferable to use shielded cables to connect the detector.

- ⚠ Never use two or more wires to increase the cross-sectional area of the wire. The cable must be one length of cable (without connections) and properly connected to the appropriate terminals. Use a maximum torque of 0.60 Nm.
- ⚠ Never place a detector cable next to a coaxial cable or a power cable and never in the same bundle or cable run.

2.5 Connecting the power supply

Connect the **earth to terminal 3** and then the **230V mains voltage to terminals 1 and 2 on the terminal**; see the box below.



It must be possible to electrically isolate the U•H1 unit for maintenance (protection via a circuit breaker or double pole switch).

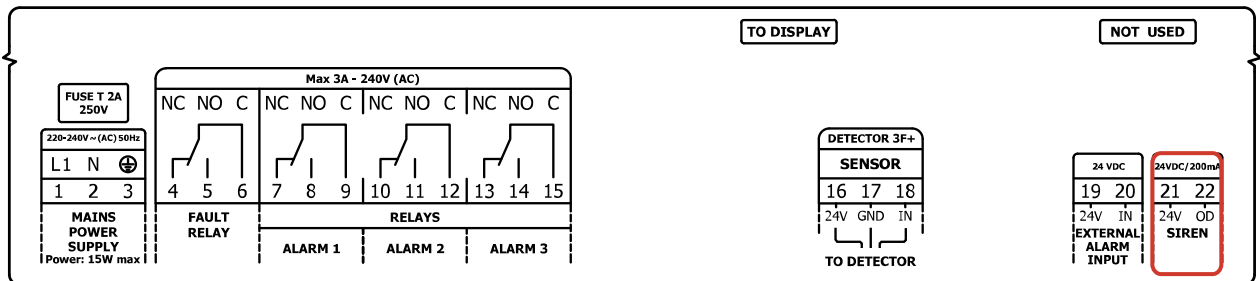
The power supplies for the U•H1 unit and the different devices must be connected to the same circuit. Ensure that the power conductors are always attached together and kept separate from the low-voltage conductors.

The power cables for the 230 V part must have a minimum cross-sectional area of **1.5 mm²**.

⚠ The U•H1 unit is a Class-I device. The U•H1 unit must always be connected to the earth, in accordance with the instructions given in this manual.

2.6 Connecting the siren

Connect the **S** and **V-** terminals on the siren to the U•H1 unit (Terminals 42 and 43, respectively). Respect the polarity to avoid damaging the siren.

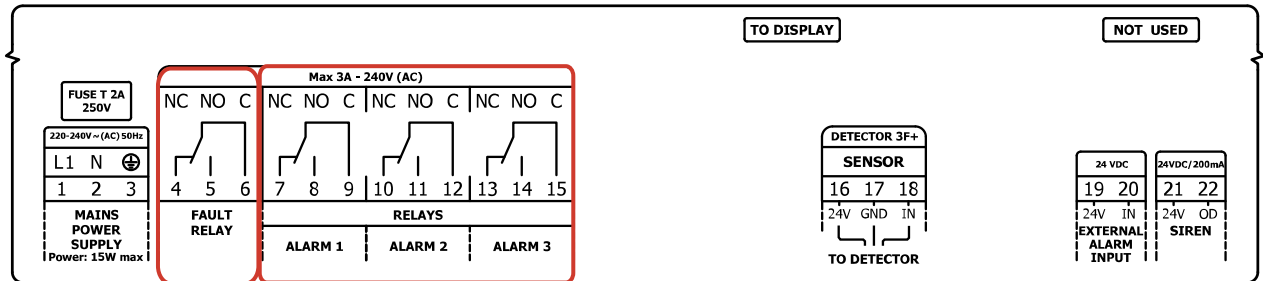


The cables used to connect the siren must meet the same requirements as the detector cable (see § 2.4 Connecting the detector).

See the operation manual for the siren for instructions on how to connect the siren and configure its tone.

2.7 Connecting the relays

The U•H1 unit has three relays that can be addressed by the alarms, a technical-fault relay, and an alarm repeater relay. Diverse types of devices can be wired to these relays, such as air blowers or extractors, sirens, LED warning signs or flashing lights, etc.



2.8 First start-up

Before you power on your U•H1 unit, please ensure that the terminals have been tightened properly and the power voltage is in the acceptable operating range for the U•H1 unit.

⚠ Please contact **DALEMANS sa/nv** to set up a commissioning appointment.

The LEDs on the motherboard must light up when the device is powered on. It is important that the user checks that these are all green and not flashing, except for the yellow LED on the right-hand side of the motherboard, which should flash and off at one-second intervals.

Immediately after the unit is powered on, the LCD screen on the unit must turn blue and the buzzer should make a short, uninterrupted sound.

3 CONFIGURATION

3.1 Configuration mode

The configuration mode for the U•H1 unit comprises a set of menus that allows the system settings to be configured. The user can access these menus, regardless of the status of the U•H1 unit, by pressing **ENTER** on the keyboard (if the display is in standby, the user should first exit standby mode by pressing any key). Once in this mode, the display backlighting **turns blue**.

The U•H1 unit automatically exits configuration mode after an idle period of 60 seconds (a period in which no action is performed using the keyboard) and returns to the appropriate mode: normal mode, if no faults or alarms have been signaled; fault mode, if a fault, but no alarms, have been signaled; or alarm mode if an alarm has been signaled.

3.2 Configuration principle

The factory settings for the U•H1 unit are intended for heater rooms and may be changed depending on the intended use.

The measuring channel is deactivated in the factory. A detector-detection script must be run (see § 5.3.1 **Initializing the detector**).

A gas-detection system controlled by the U•H1 unit must be configured as follows:

1. Detect the detector and activate the input channels.
2. Select the appropriate "standard config."
3. **[Optional]** Adjust the settings specific to the installation.

i These operations require the intervention of qualified technicians. Contact **DALEMANS sa/nv** for more information.

3.3 Factory configuration

The U•H1 control unit comprises a factory configuration which can be adapted based on the installation in question.

By default, the U•H1 control unit is configured as follows:

Default Config.			F	R1	R2	R3	SO
Channel #	Measurement range	FAULT	✓				
Channel 1	0 -> 100% LEL	A1		✓			S
		A2			✓	✓	S

Where:

- **A1** = alarm level 1, set on 20%LEL by default
- **A2** = alarm level 1, set on 40%LEL by default
- **SO** = siren output
- **F** = Fault relay
- **Rx** = Alarm relay x
- **AR** = Alarm repeater
- ✓ = the alarm level from the selected row is mapped to the relay/output from the selected column
- **S** = the alarm level from the selected row is mapped to the relay/output from the selected column in siren mode

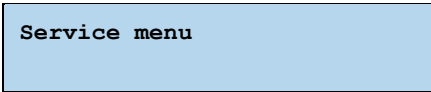

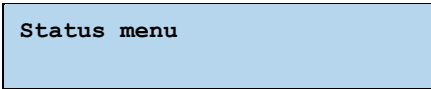

❗ For more information about all the standard configurations available, please contact **DALEMANS sa/nv**.

4 USER MENU

The user can access the menus presented in this section, since they do not require any restricted access privileges.

4.1 Main menu


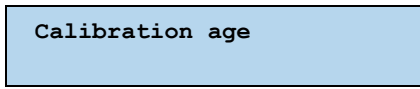
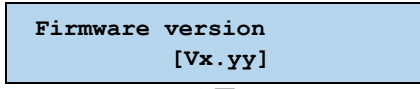
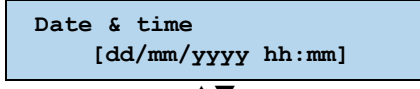
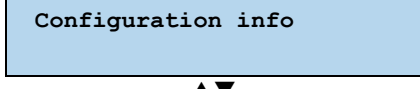
The user can access the main menu by simply pressing **ENTER**:

	Content
	Accessing the Services Menus
	System Information
	Status of System Components
	System Tests

4.2 Info menu

The *Info menu* provides information about all the components of the U•H1 unit.

All these items can only be accessed in read-only mode, except for the date.

	Content
	View Unit History
	View the calibration age for the detector
	Unit Software Version
	Unit Date and Time
	Submenu providing the configuration information for the U•H1 unit

i The user can navigate the menus using the arrow keys on the keyboard and then make their selection by pressing ENTER.

4.2.1 History

View History allows the user to view the events that have been logged by the unit. These are given in chronological order.

4.2.2 Calibration age

The *Calibration Age* menu allows the user to view the time that has passed since the detector was last calibrated. This allows the unit to generate a maintenance alert once the maintenance interval has been exceeded (see § 5.2 **Advanced tests**).

4.2.3 Firmware version

The *Firmware Version* on the *Info Menu* allows the user to view the version number of the firmware (the operating system for the unit).

4.2.4 Date and time

The date and time of the U•H1 unit are stored in Non-Volatile memory. They are only updated when the unit is powered.

If the date or time of the U•H1 unit is incorrect, the user can press **ENTER** on the keyboard to enter edit mode.

- *Edit Date & Time* appears.
- The cursor flashes on the value to be modified in the date or time field:

```
Date & time setting
dd/mm/yyyy hh:mm
```

The user can change the field to be modified using the **Right** and **Left** arrow keys:

The user can change the value in the selected field using the **Up** and **Down** arrow keys.

Once the date and time has been updated, the user can confirm the modification by pressing **ENTER**.

The user can cancel the modification and return to the info menu by pressing **ESC**.

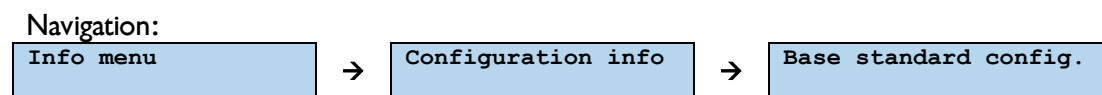
4.3 Configuration information

All the configuration items for the U•H1 unit can be consulted using the *Configuration Info* sub-menu, i.e.:

	Content
▲▼ Base standard config	View the Standard Basic Configuration
▲▼ Alarm thresholds	View the alarm thresholds values
▲▼ Failsafe modes	List of all the relays with their respective security mode: failsafe or non-failsafe

Level 1 alarm mode	Alarm level 1 behavior: latching or non-latching
▲▼	
Level 1 siren mode	Alarm level 1 siren mode active/inactive
▲▼	
Channels info	View the Channel Settings for the Unit
▲▼	
External alarm info	View the external alarm input parameters
▲▼	
Error reset mode	Reset acknowledgment mode for error messages
▲▼	

4.3.1 Base standard configuration



This is the base standard configuration, based on which the device was configured. The U•H1 is a device that allows a wide range of configurations.

Modifications to the configuration can be made following this selection.

i Please contact a **DALEMANS sa/nv** representative for more details about custom configurations.

4.3.2 Alarm thresholds

This item from the Configuration info menu allows to view the configured alarm thresholds, for each alarm level, beyond which the control unit goes into alarm mode.

4.3.3 Relays failsafe modes

The safety mode of a relay defines its status when it is at rest:

- **Not in failsafe mode:** the relay is not powered at rest.
- **Failsafe mode:** the relay is powered at rest.

The failsafe mode of an alarm relay is unset by default. The failsafe mode of each alarm relay is independently configurable.

i By default, all relays are '**Not failsafe,**' except for the fault relay which is always '**Failsafe.**'

4.3.4 Reset mode for level 1 alarms

The reset mode for an alarm specifies the way in which it is reset:

- **Latching mode:** when the cause of the alarm has disappeared, the alarm remains activated until a manual action (**RESET 2x**) is performed on the control unit.
- **Non-latching mode:** when the cause of the alarm has disappeared, the alarm is automatically reset and disappears.

Only the reset mode for the level 1 alarms can be configured. A level 2 alarm always needs to be manually reset.


In manual reset mode, the U•H1 control unit can display an alarm message when the gas concentration has already returned to under the alarm threshold.

```
Chaudière 1
      Gas alarm   13%LEL
```

This configuration element applies to all level-1 alarms.

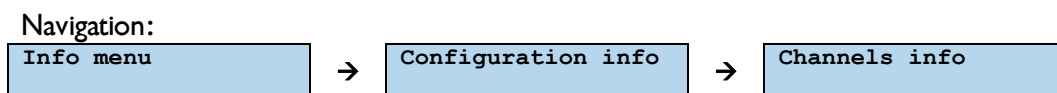
4.3.5 'Siren' mode for level 1 alarms

The '**Siren**' mode designates a specific behavior like that of the "Siren" output of the U•H1 control unit or its audible indicator: while the alarm is still active (the gas concentration is still greater than the alarm threshold), it is possible to reset the actions on the relays.

 This mode does not apply to level-2 alarms.

This configuration element applies to all level-1 alarms.

4.3.6 Channels information

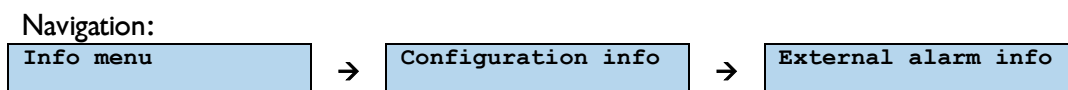


The '**Channels info**' item allows you to view the status list of the input channels.

The possible states are as follows:

- **Disabled:** Even if a detector is connected to this channel, it will be ignored by the central unit. No measurement or error status will be reported.
- **Enabled:** the measurement channel is active; the central unit reads the signal and acts accordingly.

4.3.7 External alarm menu



The *External alarm menu* allows the user to view the settings associated with the external alarm input, i.e., its behavior and the actions that are triggered when it switches.

	Content
▲▼ Ext. alarm config. [addressing selection]	Addressing of the external alarm input
▲▼ Alternate name [name set]	Allows the user to view the name given to the external alarm
▲▼ Latching mode [Latching/Non-latching]	Latching mode for the external alarm
▲▼ Siren addressing [Addressed/Non-addressed]	Configuration of the addressing of the siren that is potentially associated with the external alarm
▲▼ Normal state [Normally closed/Normally open]	Normal status of the external alarm input
▲▼	

① The external alarm status must be enabled to display the other items in the '*Ext. alarm info*' menu.

a) Configuration of the external alarm

The external alarm can have the following configurations:

- **Disabled:** a status change on the input will not have any effect
- **Set alarm level 1:** a status change on the input will trigger alarm level 1
- **Set alarm level 2:** a status change on the input will trigger alarm level 2
- **Set alarm levels 1&2:** a status change on the input will trigger alarm levels 1&2

Ext. alarm config.

① Any enabling or disabling of settings should be conducted by a technician certified by **DALEMANS sa/nv**.

b) External alarm alternate name

An alternate name allows to give a specific name to the external alarm, so that it can be displayed on the screen in the event of an alarm is triggered.

Below is an example of what the display will show if an external alarm has been activated, where the alternate name has been set to "Fire alarm":

```
External alarm
Fire alarm
```

c) Latching mode

Latching mode allows the user to configure the latching mode for the external alarm:

- **Latching:** when the cause of the alarm is gone, the alarm remains active until manual action is taken on the unit (**RESET button pressed twice**).
- **Non-latching:** when the cause of the alarm is gone, the alarm is automatically reset and disappears.

i Only the reset mode for the level 1 alarms can be configured. A level 2 alarm always needs to be manually reset.

d) Siren addressing from the external alarm

Siren Addressing allows the user to define how the siren behaves when the external alarm is triggered.

The following statuses are possible:

- **Addressed:** the buzzer and the output siren of the unit are activated when the external alarm is activated.
- **Not addressed:** the buzzer and the output siren of the unit are not associated with the status of the external alarm input.

i Unaddressed Siren mode is useful when the actions taken on the relays must depend on what is connected to the external alarm input, without this being interpreted as a gas alarm (e.g., a fire-detection system).

e) Normal state of the external alarm

The external alarm, when enabled, is triggered by a change in status of its dedicated input on the U•H1 unit. This configuration item specifies the status of the input when idle and, as a result, the nature of the change in status that triggers the alarm.

The following statuses are possible:

- **Normally Closed:** the circuit connected to the input is closed when idle. Therefore, the external alarm is activated when the circuit opens.
- **Normally Open:** the circuit connected to the input is open when idle. Therefore, the external alarm is activated when the circuit closes.

4.3.8 Errors reset mode

The U•H1 Control Unit has an internal fault management. Once detected, any abnormal operation of the U•H1 Control Unit or detector is notified by an action on the relay indicating a technical fault.

The mode to reset a technical fault specifies how it is reset:

- **Automatic** reset:

```
Error reset mode
Automatic
```

When the cause of the error restored, the message is automatically reset and disappears.

- **Manual** reset:

```
Error reset mode
Manual acknowledge
```

When the cause of the error disappears, the message remains visible until the user manually acknowledges it by pressing **twice** on the **MUTE/RESET** button.

i Changing the error reset mode should be conducted by a technician certified by **DALEMANS sa/nv**.

4.4 Status menu

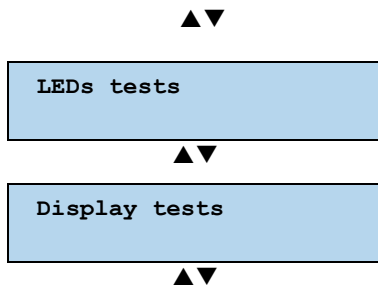
The *Status menu* allows the user to view the status of the components of the U•H1 unit.

	Sub-menu	Content
▲▼ Measurement info	Measurement Channels	Provides the status: <ul style="list-style-type: none"> - Disabled: the system considers this channel to be inactive - Measurement Display
▲▼ Outputs	Outputs	Provides the status of the outputs: <ul style="list-style-type: none"> - The system considers this output to be disabled. - enabled/disabled
▲▼ Power supply [Value]	Power Supply	The voltage of the unit is displayed.
▲▼ Temperature [xx °C]	Temperature	Indicates the temperature of the U•H1 unit: pressing ENTER causes the system to display the minimum, average and maximum temperatures.



4.5 Test menu

This *Test menu* allows the user to check that the display or the LEDs on the front panel are working correctly. Gas detection works as usual while a test is being conducted.



Sub-menu	Content
LEDs tests	Run a test sequence that makes the LEDs blink one after another
Display tests	Run a test sequence that displays a character on each character position successively, while changing the display's backlight

5 SERVICE MENU

Service menus allow us to modify the settings of the U•H1 unit that do require any knowledge regarding gas detection, or which cannot cause a gas-detection-related risk in the event of a fault or omission.


Please contact a technician certified by **DALEMANS sa/nv** for a more in-depth analysis of your individual situation.

	Content
▲▼ Tests menu	Advanced System Tests
▲▼ Configuration menu	Configuring the U•H1 Unit
▲▼ Maintenance menu	Maintenance Management

5.1 Protected access

The Service Menu is protected by the following password:

Access code: 110

 Do not use this password without reading the information contained in this manual. The functions on the *Service Menu* may affect the configuration of the unit!

When the user enters the *Service menu*, the display enters password-entry mode:

ENTER password
█

The **Up** and **Down** arrow keys allow the user to change the value of the character selected. The **Right** arrow key allows the user to move to the next character and the **Left** arrow key allows them to return to the previous character.

When the user moves from one character to another, the character that is no longer selected is hidden. This means that only the character being entered is visible.

ENTER password
**0

The user can confirm the password they have entered by pressing **ENTER**. If it has been entered correctly, the Services Menu is activated and the *Tests Menu* sub-menu is displayed.

If the password entered is incorrect, the main menu remains active and the *Service menu* is displayed again.

5.2 Advanced tests

5.2.1 Outputs testing



This item on the *Test menu* allows the user to temporarily force the outputs to activate, to verify that they are working correctly (relays and siren).

⚠ Testing an output of the U•H1 unit means that it is activated, along with the servos that are connected to it (a gas valve or siren, etc.).

i This test does not allow the user to disable an output that has already been enabled.

Once the output test option has been selected, the user must select the output to be tested using the **UP** and **DOWN** arrow keys.

The status of the selected output is displayed each time.

	Content
<p>▲▼</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> General fault relay Not activated </div>	Technical-Fault Relay
<p>▲▼</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Alarm relay 1 Not activated </div>	Alarm Relay 1
<p>▲▼</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Alarm relay 2 Not activated </div>	Alarm Relay 2
<p>▲▼</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Alarm relay 3 Not activated </div>	Alarm Relay 3
<p>▲▼</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> Siren output Not activated </div> <p>▲▼</p>	Transistorized output for the siren

In a second step, the control unit offers to select an adjustable delay after which the target output is activated for a configurable duration.

The possibilities are as follows:

- **'Immediate'**: (no delay, the output is activated after confirmation)
- **'1 min'**
- **'2 min'**
- **'3 min'**
- **'5 min'**
- **'10 min'**
- **'15 min'**

```
Select delay
      3 min
```

The user can confirm their selection by pressing **ENTER**.

In a third step, the control unit offers to select an adjustable duration for which the target output will be activated for.

```
Select duration
      5 s
```

The possibilities are as follows:

- **'5s'**
- **'15s'**
- **'30s'**
- **'1 min'**
- **'5 min'**
- **'15 min'**

The system then asks for confirmation before switching the output.

```
General fault relay
Ready to activate?
```

The user can confirm the activation of the selected output by pressing **ENTER**. It is then activated, along with the equipment that is connected to it.

```
General fault relay
Activated
```

The output remains activated for the duration of the output test.

This test ends:

- upon manual action by user (pressing the **ESC** key).
- when the maximum activation time for the output (15 minutes) has expired.

The user may interrupt and cancel the **Output Test** function at any time by pressing **ESC** key. The test sub-menu is then re-enabled and displays the output test function.

5.2.2 Simulating the detector



A gas-detection simulation can be conducted without disconnecting a detector that is connected to a measurement channel on the U•H1 unit.


The simulation starts with:

- The initial value for the simulation is the actual gas concentration read by the detector.
- The cursor flashes on the digit being modified (tens or units).

The user can modify the simulated gas-concentration value using the **Up** and **Down** arrow keys.

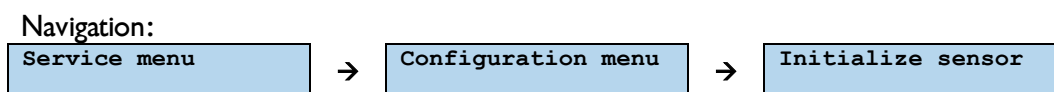
The user can use the **Right** and **Left** arrow keys to move from one digit of the gas-concentration value to the other, with the first digit changing the tens and the second digit changing the units.

The user can end the simulation by pressing **ESC**.

 Alarm management operates as per usual during a simulation. This means that, if the simulated gas concentration exceeds an alarm threshold, the alarm is triggered and the associated outputs are activated, along with the servos connected to them.

5.3 Configuration menu

5.3.1 Initializing the detector



The factory settings of the U•H1 unit disable all the measuring channel. The U•H1 unit then needs to be told if the detector is connected.

Detection and calibration phase

- A rotating symbol shows the progress of the calibration.
- A "-" (hyphen) symbol indicates a channel that does not have a detector or a channel that is connected to a detector for which the zero-calibration failed (too much signal interference).
- A "*" (asterisk) symbol indicates a channel that is connected to a detector that has been zero calibrated successfully.

The result of the detection is displayed:



```
Detected sensor 1
                *
```

The U•H1 unit asks for confirmation of the detected configuration:

```
New sensor config.?  
*
```

Once the user has confirmed this by pressing **ENTER**, the detected configuration is loaded into the U•H1 unit. It is now operational. The user can cancel the modification and return to the info menu by pressing **ESC**.

```
Configuration set
```

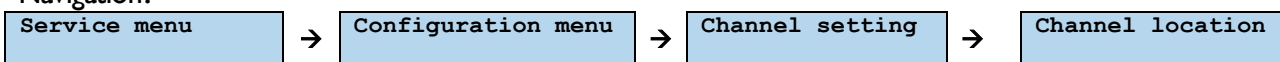
5.3.2 Configuring the measurement channel

Once a measurement channel has been selected, the *Channels setting* allows the user to do the following:

- assign a location to the detector.
- set the detector offline.

a) Setting a detector location

Navigation:



The location in the U•H1 unit allows the user to identify the detector that is connected.

The user may assign a location to a detector in two ways:

- **Preset** Location
- **Custom** Location

These two methods may be combined by customizing a location that has previously been chosen from the list of preset locations.

i) Preset locations

The U•H1 unit proposes a list of preset locations. This is available in three languages (English, Dutch and French). For details of the list, see **Annex D: Predefined locations**

The user selects the location from the list using the **Up** and **Down** arrow keys.

When the title of the location allows it (display is limited to 20 characters), an index from 1 to 9 may be added using the **Right** and **Left** arrow keys. Depending on the item selected, it may also be possible to select other variants. See **Annex D: Characters available for text edition**

The user confirms their choice of location by pressing **ENTER**.

The user may interrupt and cancel their choice of location by pressing **ESC**.

ii) Custom location

The location of a detector can be customized or completely modified. The U•H1 unit enters Location Edit Mode when the Custom Location function has been selected.

```
Location channel 1
Channel 1
```

The cursor flashes on the character being edited.

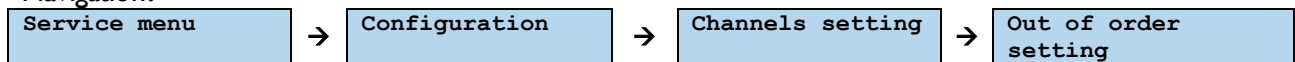
The **Up** and **Down** arrow keys allow the selected character to be edited.

The user confirms their choice of location by pressing **ENTER**.

The user can interrupt and cancel the editing of the location by pressing **ESC**.

b) Setting a detector to “Out of order”

Navigation:



It may be useful to set a detector offline while waiting for an authorized person to conduct a maintenance operation. When the **Out of order** function has been selected, the U•H1 unit shows the status of the selected detector.

```
Out of order setting
Enabled
```

The user can set the detector to “Out of order” by pressing **ENTER**. Confirmation is then requested.

```
Out of order setting
Put out of order?
```

The user confirms that the detector should be set offline by pressing **ENTER**. The technical-fault relay then switches on if it has not already switched.

```
Out of order setting
Out of order
```

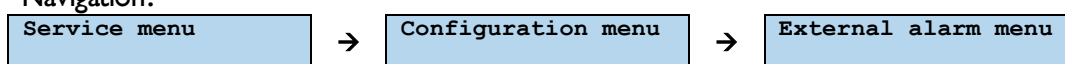
The user may interrupt and cancel the procedure for setting the detector to offline at any time by pressing **ESC**. The configuration menu for the selected detector is then enabled once more.

The user can set a detector to online again in the same way.

⚠ A detector being “out of order” is a technical fault. This means that the fault relay switches on!

5.3.3 Configuring the external alarm

Navigation:



The *External alarm menu* allows the user to configure the settings associated with the external alarm input, i.e., its behavior and the actions that are triggered when it switches.

	Content
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ▲▼ Ext. alarm config. [addressing selection] </div>	Addressing of the external alarm input
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ▲▼ Alternate name [name set] </div>	Allows the user to view the name given to the external alarm
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ▲▼ Latching mode [Latching/Non-latching] </div>	Latching mode for the external alarm
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ▲▼ Siren addressing [Addressed/Non-addressed] </div>	Configuration of the addressing of the siren that is potentially associated with the external alarm
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> ▲▼ Normal state [Normally closed/Normally open] </div>	Normal status of the external alarm input

i The external alarm status must be enabled to display the other items in the *Ext. alarm menu*, except for the *Normal state* item. Normal state can be configured before enabling the external alarm to avoid false alarms.

a) Configuration of the external alarm

The external alarm can have the following configurations:

- **Disabled:** a status change on the input will not have any effect
- **Set alarm level 1:** a status change on the input will trigger alarm level 1
- **Set alarm level 2:** a status change on the input will trigger alarm level 2
- **Set alarm levels 1&2:** a status change on the input will trigger alarm levels 1&2

Ext. alarm config.
 Disabled

b) External alarm alternate name

An alternate name allows to give a specific name to the external alarm, so that it can be displayed on the screen in the event of an alarm is triggered.

External alarm
 Fire alarm

The cursor flashes on the character being edited.

The **Up** and **Down** keys are used to change the selected character.

The **ENTER** key is used to confirm the choice of location.

The **ESC** escapes key interruptions and abandons the modification of the location.

c) Latching Mode

Latching mode allows the user to configure the latching mode for the external alarm:

- **Latching:** when the cause of the alarm is gone, the alarm remains active until manual action is taken on the unit (**RESET button pressed twice**).
- **Non-latching:** when the cause of the alarm is gone, the alarm is automatically reset and disappears.

i Only the reset mode for the level 1 alarms can be configured. A level 2 alarm always needs to be manually reset.

d) Siren addressing from the external alarm

Siren Addressing allows the user to define how the siren behaves when the external alarm is triggered.

The following statuses are possible:

- **Addressed:** the buzzer and the output siren of the unit are activated when the external alarm is activated.
- **Not addressed:** the buzzer and the output siren of the unit are not associated with the status of the external alarm input.

i By default, the external alarm is addressed to the siren output of the unit.

e) Normal state of the external alarm

The external alarm, when enabled, is triggered by a change in status of its dedicated input on the U•H1 unit. This configuration item specifies the status of the input when idle and, as a result, the nature of the change in status that triggers the alarm.

The following statuses are possible:

- **Normally Closed:** the circuit connected to the input is closed when idle. Therefore, the external alarm is activated when the circuit opens.
- **Normally Open:** the circuit connected to the input is open when idle. Therefore, the external alarm is activated when the circuit closes.

The user can begin to modify the currently defined normal status by pressing **ENTER**.

The change to the opposite normal status is then proposed.

```
External alarm state
Set normally opened?
```

The user can confirm the change in the normal status for the input for the external alarm by pressing **ENTER**. The user can cancel the modification and return to the info menu by pressing **ESC**.

5.4 Maintenance menu

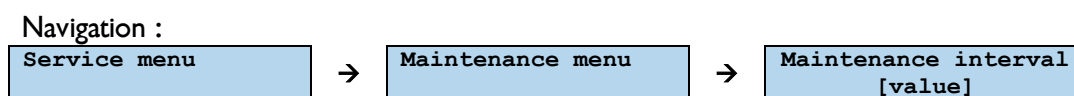
The maintenance menu allows the user to configure the functions associated with the maintenance-management alert, i.e.:

- the maintenance interval
- renewing the detector-calibration validity.

⚠ It is recommended that you maintain your installation on a yearly basis to guarantee optimal monitoring. The user is therefore **strongly discouraged** from changing the value of this interval.

i The maintenance alert does not indicate a system malfunction but is merely a reminder. However, renewing the detector-calibration validity may have a significant impact on the gas-detection function and may cause the unit to not work properly if the detector is not correctly calibrated any more.

5.4.1 Maintenance interval



By default, the maintenance interval is set at **13 months**.

It may be useful to adapt the maintenance interval under some conditions (specific atmospheres, set or variable temperature and humidity conditions, etc.). It can be edited to any interval ranging from **3** to **26 months**.

Once the maintenance-interval modification has been selected, the current interval configured in the U•H1 unit is displayed and the cursor flashes on the first digit of the value in months.

```
Maintenance interval
 13 months
```

The user can change the interval value using the **Up** and **Down** arrow keys.

The user can use the **Right** and **Left** arrow keys to move from one digit of the interval value to the other, with the first digit changing the tens and the second digit changing the units.

The user can select the value chosen for the calibration interval using the **ENTER** key. Confirmation is requested.

```
Set interval?
 09 months
```

The user can confirm the modification of the calibration interval by pressing **ENTER**. The user can cancel the modification and return to the info menu by pressing **ESC**.

5.4.2 Renewing the validity of the calibration

Usually, the validity of the calibration settings for the detector is renewed automatically when it is calibrated by a technician certified by **DALEMANS sa/nv**. The maintenance interval for the calibrated detector is then reset.

In some specific cases, the detector may need to be verified by a certified control authority and the validity of the calibration of this detector may then be extended.

The detector is displayed with the number of days that have lapsed since its last calibration and the full-scale value of the gas concentration that the detector is able to estimate.

```
Detector 1
    346 days
```

The user can confirm their selection of detector by pressing **ENTER**. The system then asks the user to confirm the renewal of the validity of the calibration for the selected detector.

```
Detector 1
    Renew calibration?
```

The user can confirm the renewal of the validity of the calibration for the detector by pressing **ENTER**. The next maintenance date may have been modified at this point. The user can cancel the modification and return to the info menu by pressing **ESC**.

6 SPARE PARTS AND OPTIONS

A list of available spare parts that can be purchased is given below:

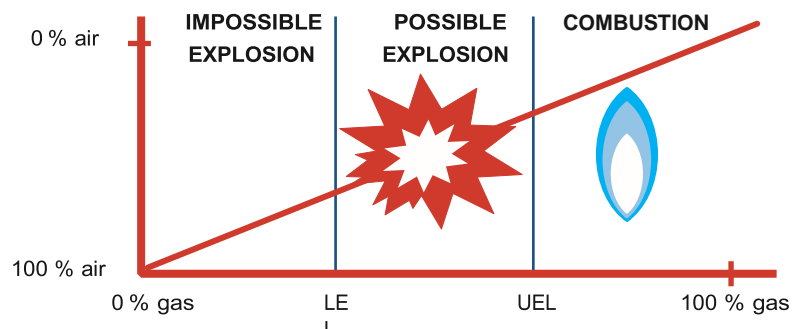
Designation	Item reference
U•H1 unit	00410
U•H1 cover with display	00568
U•H1 motherboard	00407
U•Line Display 30cm ribbon cable	00793
Housing for U•H1 unit (base)	00406
Feet kit for fixing U•Line units	01040
DIN rail fixing kit for U•Line units	01041

7 GAS DETECTION - PRINCIPLE

7.1 Generalities

The explosive power of a gas-air mixture depends on the gas concentration in the air. If this concentration is too low, it is said that the mixture is too weak to explode. If, by increasing the gas concentration, the mixture becomes rich enough to explode, we have reached the **Lower Explosive Level – L.E.L.**

At the **Upper Explosive Level - U.E.L.**, the mixture becomes too rich and cannot explode due to a lack of oxygen and simply burns.



A **DALEMANS sa/nv** gas detection control unit helps you to prevent any risk of explosion in an atmosphere where the risk of a gas leak exists.

7.2 Target gases

The U•H1 control unit has been specially designed to be placed in a heater room environment where there is a risk of leakage of the following gases:

Gaz *	Formula	Density (air = 1)	CAS N°	Position
Cracked gas	-	0,47	-	High
Natural gas	-	0,68	-	
Hydrogen	H ₂	0,069	1333-74-0	
Methane	CH ₄	0,55	74-82-8	Low
Butane	C ₄ H ₁₀	2,05	74-98-6	
Propane	C ₃ H ₈	1,56	106-97-8	

* List not exhaustive

8 PRODUCT SPECIFICATIONS

This product has been designed and manufactured in Belgium according to the quality charter of **DALEMANS sa/nv**.

U•H1 control unit		
Power supply	Mains	220-240 V (AC) ~ 50Hz
	Power	15 W max.
	Overvoltage category	Category II
External circuits isolation	Primary-secondary isolation	3600 Vrms
	Relays isolation between contacts and coil	4000 V (AC)
	Ethernet transformer isolation	1500 Vrms
Enclosure	Material	Plastic ABS-PC UL 94 V-0
	Dimensions (excluding PE)	265 x 233 x 72 mm
	Weight	1,2 kg
	Ingress Protection - Pollution degree	IP65 – degree 2
	Reversibility	Rotation of 180°
	Standard mounting	4 screws or mounting lugs
	Optional mounting	Mounting on DIN rail
Connection	Cable inlets	2 x M20 and 4 x M16
	Screwed terminals	1 x 2.5 mm ² or 2 x 1.5 mm ² per terminal
Inputs	Detector	1
	Type pf detector	D•TEX 3F+ (analog 3 wires)
	Wiring length	Up to 300 m
	Self-powered external alarm input 24V (DC)	1
Outputs	Alarms: Addressable changeover relays Max. 230V / 3A	3
	Fault: changeover relay Max. 230V / 3A	1
	Transistor alarm	24 V (DC) - 200 mA max.
Interface	Display	LCD backlighting of a variable color
	Power indicator	Green LED
	Inhibition indicator & Fault indicator	Yellow LED
	Navigation and configuration	Using a membrane keypad
Key features	Configurable alarm levels	2
	Access protection using password	YES
	Maintenance alert	YES
	Display of events and statuses	YES
	Customizable detector location	YES
	Test and inhibition functions	YES
Operating conditions	Temperature	-10°C to +40°C
	Humidity	10 to 90% RH (non-condensing)
	Pressure	90-110 kPa
	Altitude	Max. 2000 m
Certifications	Electromagnetic compatibility (EMC)	EN 50270 (type 1)
	Low-voltage safety (LVD)	EN 61010-1
	Marking	CE, RoHS

The information contained in this document is non-contractual and subject to change.

A. EVENT MESSAGES

Message
System startup
System configuration updated
Core configuration updated
Set General Fault relay
Reset General Fault relay
Set alarm relay 1
Set alarm relay 2
Set alarm relay 3
Reset alarm relay 1
Reset alarm relay 2
Reset alarm relay 3
Set siren
Reset siren
Reset alarms action
Reset errors action
History cleared
Menu timeout expired
Configuration saved
Date & time setting
Date & time saved
Calibration starts
Calibration done
Calibration saved
Calibration failure
Calibration timeout
Calibration cancelled
Maintenance interval setting
Calibration data renewed
Calibration ages saved
Channel enabled
Channel disabled
Channel out of order
Channel in order
Enable alarm Relay 1
Enable alarm Relay 2
Enable alarm Relay 3
Disable alarm relay 1
Disable alarm relay 2
Disable alarm relay 3
Set location preset
Set custom location
Set standard configuration
Language modified
User configuration level
Technician configuration level
Factory configuration level
Invalid password entered
Maintenance requested

Message

Battery change needed
General Fault relay test started
Alarm relay 1 test started
Alarm relay 2 test started
Alarm relay 3 test started
Alarm relay 4 test started
Siren test started
Alarm repeater relay test started
Output test terminated
Output test timeout
Outputs inhibited
Outputs de-inhibited
Simulation started
Simulation stopped
Switch to battery
System halted
System restarted
Switch back to AC supply
Unset battery
New battery installed
Battery age reset
Alarm relay x: new failsafe configuration
Alarm repeater relay: new failsafe configuration
Set threshold value for level 1 alarms
Set threshold value for level 2 alarms
Set new latching mode for level 1 alarms
Set a new Siren mode for the level 1 alarms
Set new external alarm configuration
Set the normal state for the external alarm
Set new alarm repeater configuration
Automatic sensors detection
Sensor detected
No sensor detected
Sensors detection interrupted
New alarm level 1 threshold
New alarm level 2 threshold
New Alarm level 3 threshold
New Alarm level 4 threshold
New failsafe configuration
Latching mode changed
Latching mode changed for level 1 alarms
Latching mode changed for level 2 alarms
Latching mode changed for level 3 alarms
Latching mode changed for level 4 alarms
Not addressed by external alarm

Message

Addressed by external alarm
Addressed as siren by external alarm
Alternate name changed
Siren addressing changed
Normal state changed
Configuration changed
Sensors detection
Sensor detected
No sensor detected
Sensors detection interrupted
Addressing of alarm relay changed
Addressing from the measurement channel changed
Not addressed by fault
Addressed by fault
Addressed as siren by fault
Not addressed by power failure
Addressed by power failure
Addressed as siren by power failure
ADC reset
Password changed
Calibration renewal authorized
Calibration renewal not authorized
Set new gas type
New gas configuration
New alarm level 1 type
New alarm level 2 type
New alarm level 3 type
New alarm level 4 type
Enable alarm level 1
Enable alarm level 2
Enable alarm level 3
Enable alarm level 4
Disable alarm level 1
Disable alarm level 2

B. ERROR MESSAGES

MESSAGE	PROBABLE CAUSE	TROUBLESHOOT
No error	-	-
Flash memory integrity error	Troubles occurred with the non-volatile memory	U•H1 control unit maintenance
Display not ready	Troubles occurred with the display board	U•H1 control unit maintenance
Display initialization error		
Display error		
Keys & LEDs not ready		
Keys & LEDs initialization error		
EEPROM not ready	An operation with the EEPROM failed	U•H1 control unit maintenance
EEPROM reading error		
EEPROM integrity error		
EEPROM writing error		
Date saving error		
Lowest temperature saving error		
Highest temperature saving error		
Temperatures saving error		
Password loading error		
Password saving error		
Password update error	The operation failed	Retry. If the error is persistent, U•H1 control unit maintenance
Date & time setting error	Something went wrong during initialization	Reboot. If the error is persistent, U•H1 control unit maintenance
System configuration initialization error		
Core configuration load error		
History initialization error		
Date initialization error	Data acquisition failed	U•H1 control unit maintenance
ADC calibration error		
ADC conversion (internal) error		
ADC conversion (config.) error		
ADC conversion (DMA) error		
ADC conversion timeout	The control unit is not correctly supplied by the main power	Check the main power supply
Power failure		

(continued in the next page)

MESSAGE	PROBABLE CAUSE	TROUBLESHOOT
Invalid core configuration	Something went wrong in memory	U•H1 control unit maintenance
Corrupted core configuration		
Corrupted calibration data		
Corrupted system configuration		
Corrupted password		
Corrupted info (PS)		
Corrupted info (core)		
Corrupted info (system)		
Corrupted info (error)		
Corrupted password loaded		
All channels disabled	No channel is active. The control unit is unemployed	Connect a gas detector and proceed to a detector detection
External alarm inhibited	The external alarm can no more be managed (due to a power supply failure)	If another trouble is observed, resolve it first. If the error is persistent, U•H1 control unit maintenance
Invalid system configuration	-	For technician only
Core configuration update failure		
Calibration renewal authorize failure	The operation failed	Retry. If the error is persistent, U•H1 control unit maintenance
Sensor error	The detector is in error	Check the detector and its connection to the U•H1 control unit
Out of order	The detector has been put out of order	For technician only Detector maintenance
Calibration timeout	The detector calibration failed for the given reason The fault relay is not affected	Retry. If the error is persistent, U•H1 control unit maintenance
Calibration failed		
Calib. interrupted		

C. ALARM MESSAGES

Message
No alarm
Gas presence
Gas alarm
External alarm

D. PREDEFINED LOCATIONS

The following table contains a list of all the predefined locations available in the exchange's memory.

ENGLISH TEXT	TEXTE FRANÇAIS	NEDERLANDSE TEKST
Aisle +1 P\$	Allée +1 P\$	Gang +1 P\$
Aisle rez P\$	Allée rez P\$	Gang glv P\$
Gas boiler	Boiler	Gasboiler
Laundry room	Buanderie	Wasserij
Cellar	Cave	Kelder
Heater	Chaudière	Ketel
Heater room	Chaufferie	Stookplaats
Labo classroom	Classe Labo	Labo klaslokaal
Co-generation	Cogénération	Wkk
Gas meter	Compteur gaz	Gasteller
Gas pipe	Conduite gaz	Gasleiding
Corridor	Couloir	Gang
Kitchen	Cuisine	Keuken
Cooker	Cuisinière	Gaskeuken
Technical floor	Etage technique	Technisch verdiep
Oven	Four	Gasoven
Technical duct	Gaine technique	Technische schacht
Extractor hood	Hotte	Dampkap
Moistener	Humidificateur	Stoombevochtiger
Boiler room	Local boiler	Boiler lokaal
Gas room	Local gaz	Gas lokaal
Ext gas room	Local gaz ext	Gas lokaal buiten
Technical room	Local technique	Technische ruimte
Venting room	Local ventilation	Ventilatie lokaal
Rack +1 P\$	Rack +1 P\$	Rack +1 P\$
Rack rez P\$	Rack rez P\$	Rack glv P\$
Gas ramp ht\$	Rampe gaz ch\$	Gasstraat st\$
Dryer	Sèche-linge	Droogkast
Gas collector	Collecteur gaz	Gas collector
Transit	Transit	Transit
Gas valve	Vanne gaz	Gasklep
Ext gas valve	Vanne gaz ext	Gasklep buiten
Venting	Ventilation	Ventilatie
High venting	Ventilation haute	Hoge ventilatie
Venting duct	Vide ventilé	Kruipkelder

The predefined locations containing the '\$' symbol allow a numerical value to be selected using the **Left** and **Right** arrows on the keyboard.

The other predefined locations, without the '\$' symbol, can be completed with a suffix that can be selected using the **Left** and **Right** arrows.

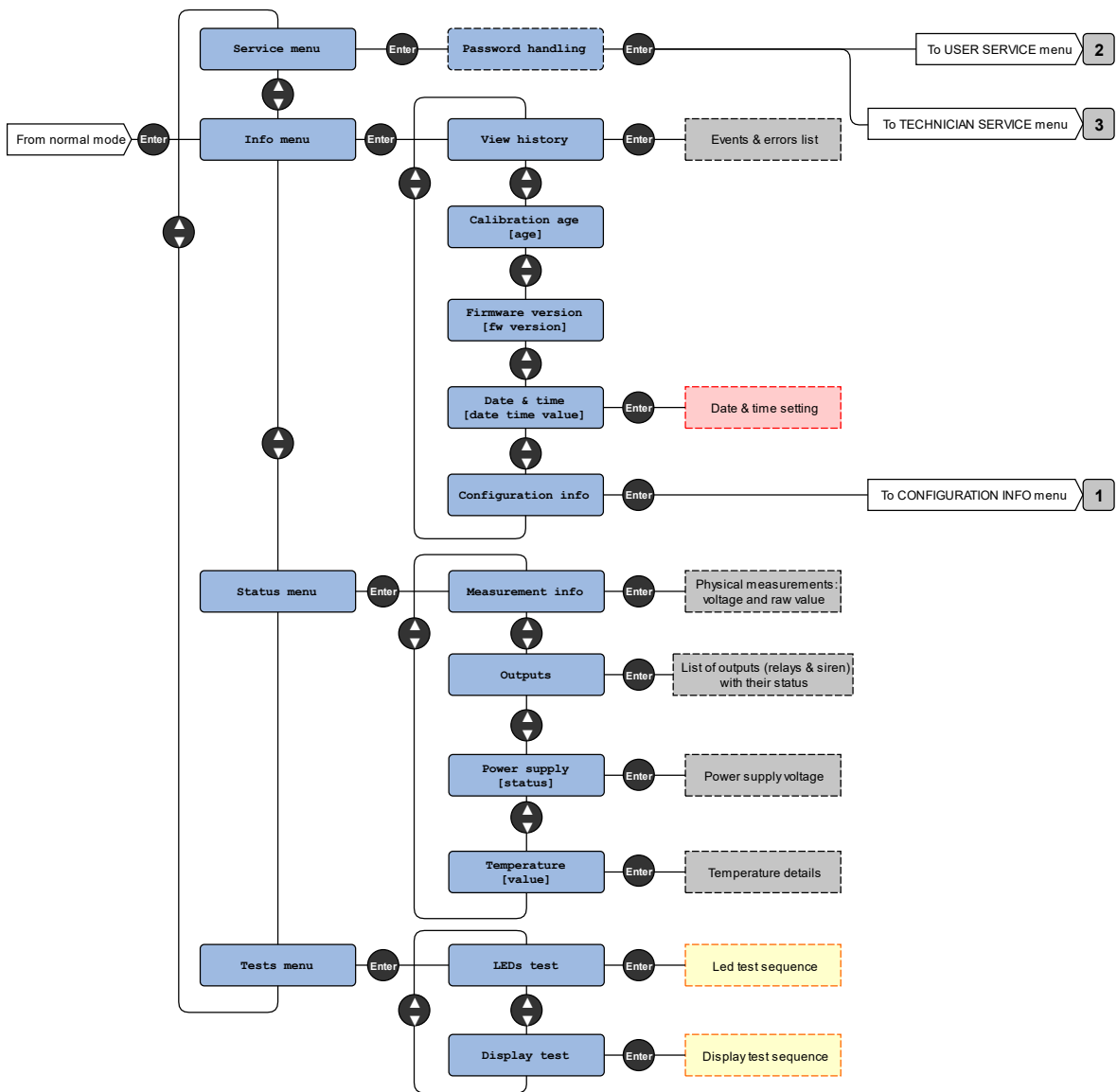
ENGLISH TEXT	TEXTE FRANÇAIS	NEDERLANDSE TEKST
right	droite	rechts
rhs	drt	r
left	gauche	links
lhs	gch	l
middle	milieu	midden
mid	mil	mid
rez	rez	glv

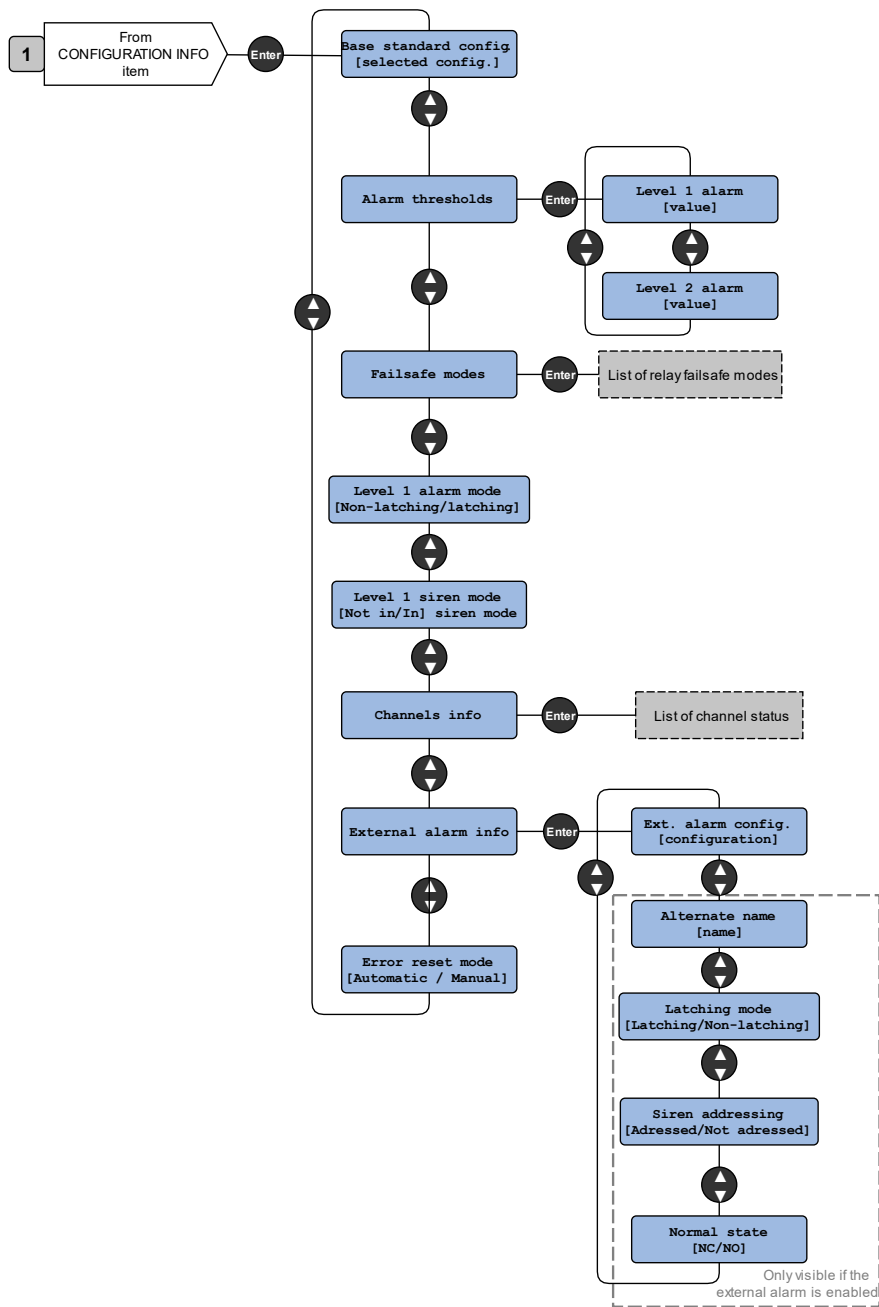
Alternatively, for these same locations, numerical values are available by using the **Left** and **Right** arrows on the keyboard while scrolling past the list of suffixes (to the left for negative values, and to the right for positive values).

E. CHARACTERS AVAILABLE FOR TEXT EDITION

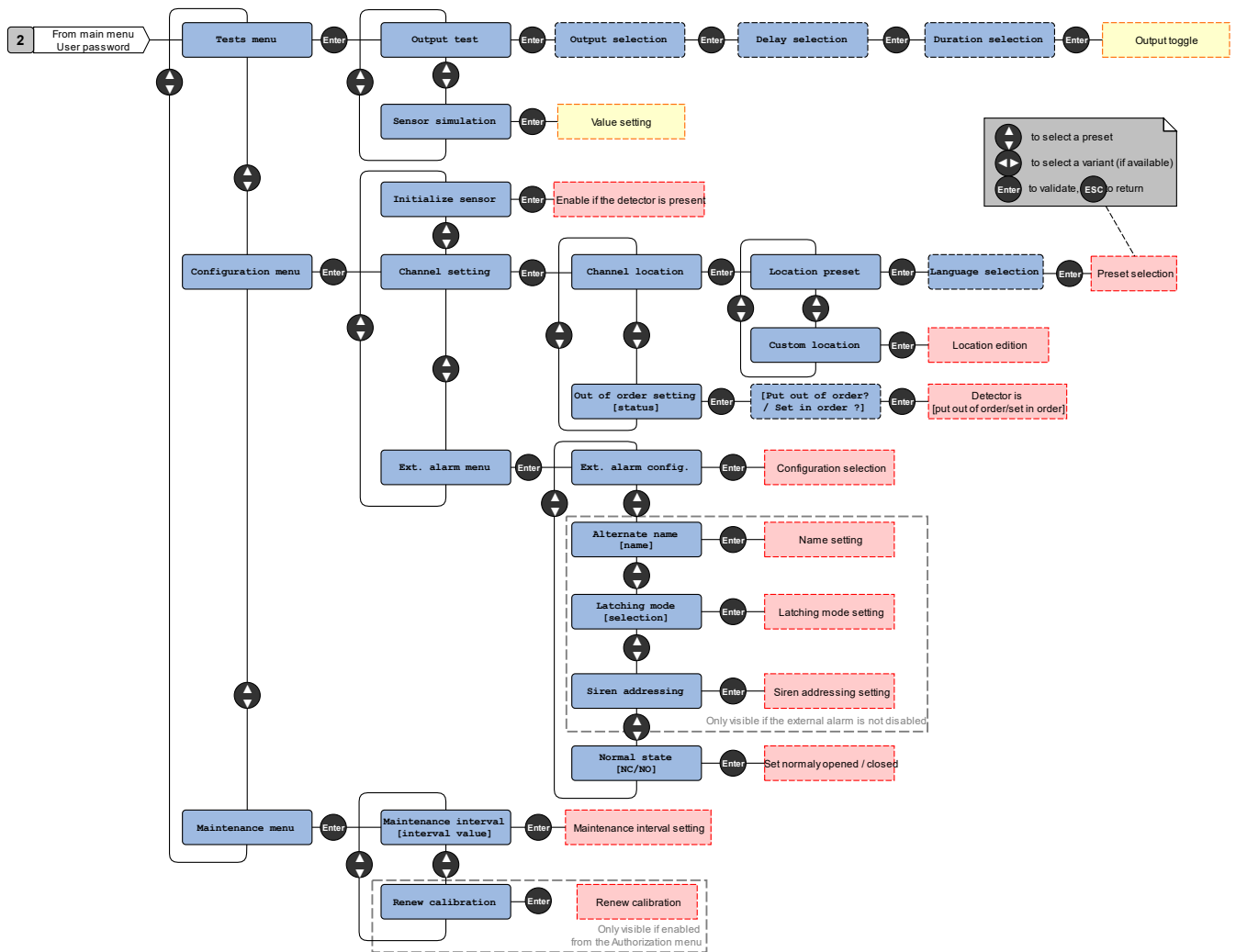
- The numbers **0 - 9**
- The letters of the **alphabet lowercase**
- The letters of the **alphabet in uppercase**
- **Vowels with accents** and **ç** in lowercase
- The **dash** and the special character **@**
- The plus sign **'+'** and the minus **'-'** sign

F. USER MENU DIAGRAM





G. SERVICE MENU DIAGRAM





ALARM CONTROL UNIT FOR
FLAMMABLE GASES

INSTRUCTION MANUAL

DALEMANS[®]

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