U•C2

ALARM CONTROL UNIT FOR
REFRIGERANT GASES

INSTRUCTION MANUAL

DALEMANS®

GAS DETECTION

DALEMANS®
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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 carried out 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 performances.

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 indoor, in a clean and dry area. Please use a screen (box) to avoid any projections of water of polluting agents. Don't 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 5 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 mains power supply first

The installation and commissioning of U•C2 control unit must be performed by qualified personnel only. This qualified personnel is 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 wheelie 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 centre for the recycling of electrical and electronic equipment.

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

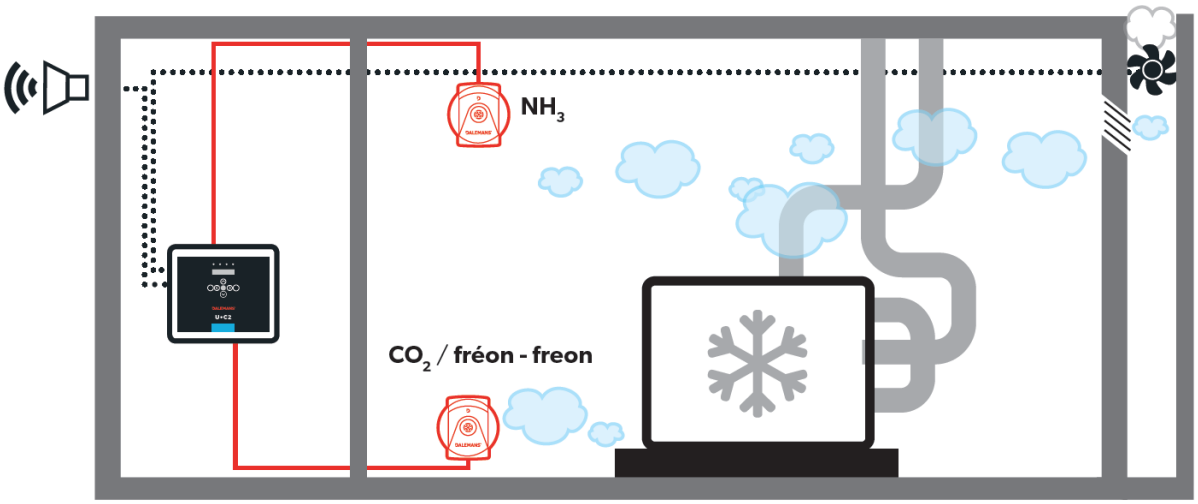
1.4 Operating Principle

The U•C2 is a control unit for detecting refrigerant gases in a commercial or light industrial building, so that action can be taken. It has two detection inputs and up to four alarm thresholds that can be configured independently for each input.

The U•C2 unit must be connected to gas detectors. A gas detector is a stationary device that sends the U•C2 a constant signal that is proportional to the concentration of gas detected in the air.

The unit can send commands to one or more pieces of connected safety equipment when the configured alarm thresholds are reached, e.g., to do the following:

- control the ventilation (air blowers or extractors)
- cause a siren to sound
- cause a LED warning panel to light up
- Shut down a machinery power supply
- send a command to a CTM (Centralised Technical Management) system

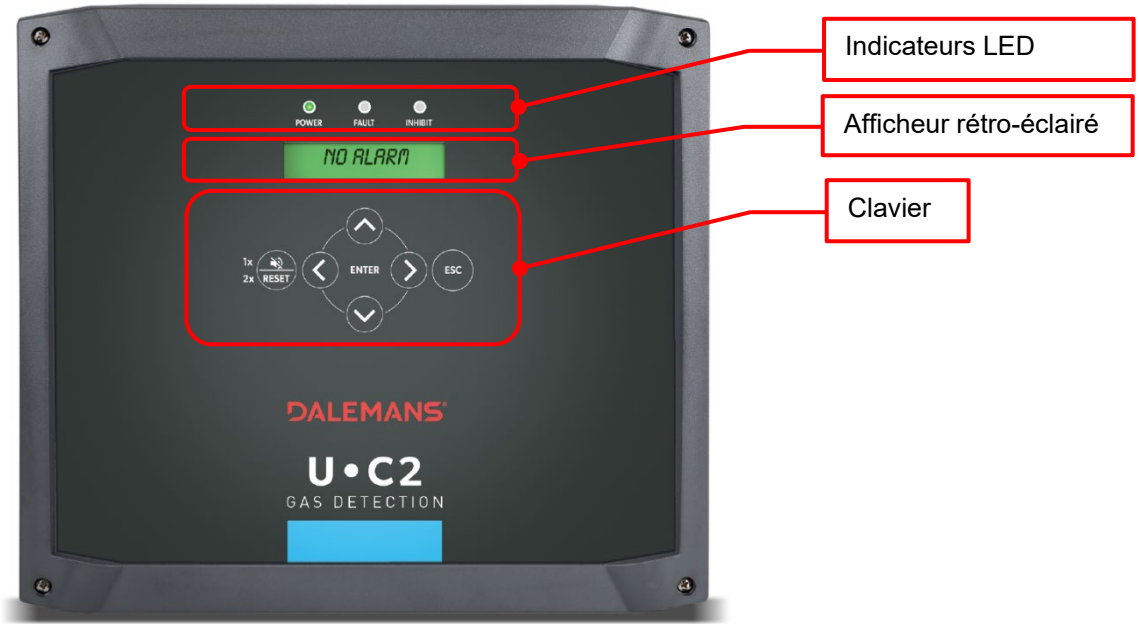


The U•C2 unit also has internal fault management. Notification is sent via a relay signalling a technical fault once any unusual use of the unit or a detector is detected. This function thus ensures the reliability of the gas-detection system installed.

The status of the U•C2 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 colour depending on the status of the U•C2 unit and shows a message explaining the status.
- There is a set of colour LEDs.
- There is a resettable buzzer which is triggered when the fault or alarm functions are triggered.

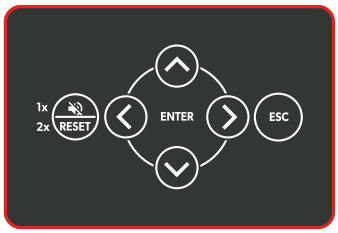
1.5 Display interface



1.5.1 LED

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.

1.5.2 Keypad



^ v	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.

1.5.3 Display

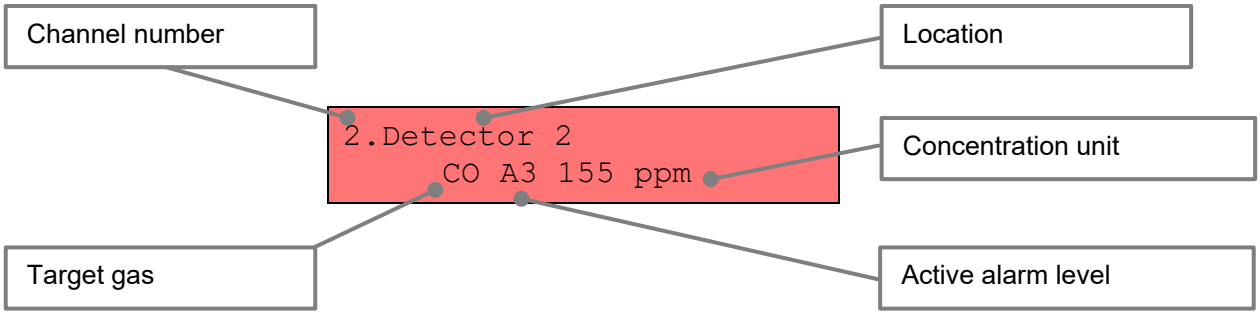
The current status of the U•C2 unit is indicated by the **messages** on the display and the colour of the backlighting.

Backlighting	**Off**	**Green**	**Yellow**	**Red**
Mode	**Standby**	**No Alarm**	**Maintenance**	**Alarm**
Message	Looped Display: • ***No Alarm*** indicates that there are no active alarms. • Maintenance Date: ***Next Maintenance*** • **Gas Concentration Values** for each of the detectors.		Maintenance interval exceeded: ***Maintenance required*** . **Technical Fault** Looped Display: • 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.

a) Alarm mode (gas detected)

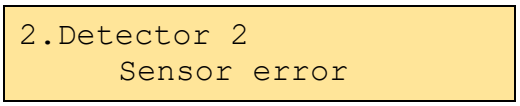
The unit enters into alarm mode when one or more alarm conditions have been met. The screen turns RED, indicating the alarm level of the highest active alarm.



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.

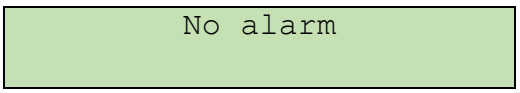


c) Normal mode

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':



d) Standby mode

When there are no gas alarms or fault messages, the backlighting of the display enters into 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

1.6 Network interface

The control unit has an ethernet interface (with an RJ45 connector) on which a MODBUS TCP protocol is available to query some data.

ⓘ More more information on the configuration and usage of the interface, please refer to *U•Line Network Interface Manual* document.

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•C2 unit may only be opened by qualified technicians.

⚠ The U•C2 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•C2 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, in order 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 a number of machined apertures. You will need to clear these machined apertures with a flat screwdriver and hammer in order to insert the cable glands.

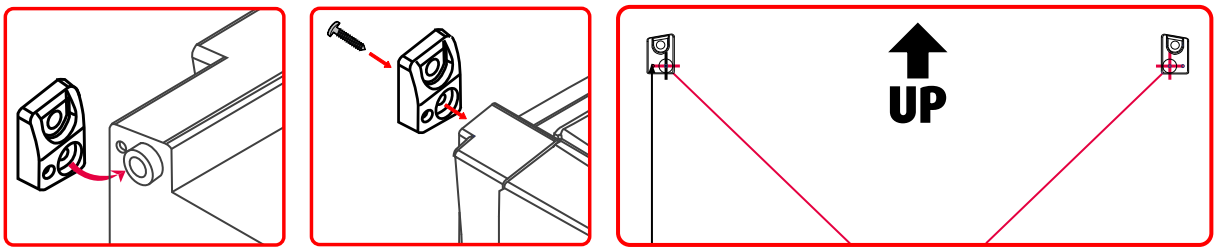
Important remark:

Never place the U•C2 unit, the siren and the detector cables in the vicinity of:

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

2.2 Placing the U•C2 unit

The U•C2 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•C2 unit on a DIN rail (optional). Please contact your **DALEMANS** 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•C2 unit.

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

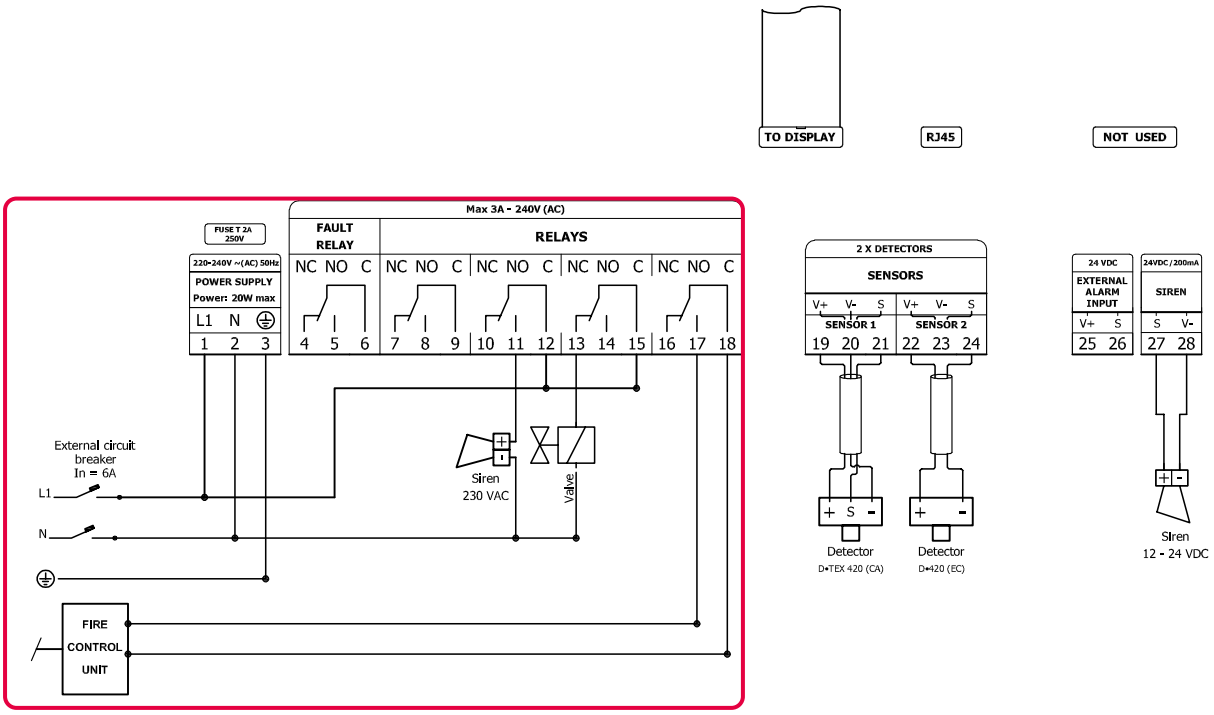
It is recommended that you place the circuit breaker in the vicinity of the equipment.

Any installation must comply with the applicable local standards and regulations, in particular 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, in order to avoid any risk of bad electrical contacts.

Example Connection Diagram for the U•C2 Unit:



2.4 Connecting the Detectors

2.4.1 General

The terminals coming from each detector must be connected to the U•C2 unit in the following order:

D•420 terminals CA/IR/SC (3 wires)	D•420 terminals EC (2 wires)	Control unit terminals
+	+	V+
-		V-
S	-	S

EC: Electrochemical - **IR**: Infrared - **SC**: Semiconductor - **CA**: Catalytic

(see Paragraphs 2.4.2 and 2.4.3 below for more details)

ⓘ The cables that connect the detectors and the U•C2 unit should not be more than 300 m long.

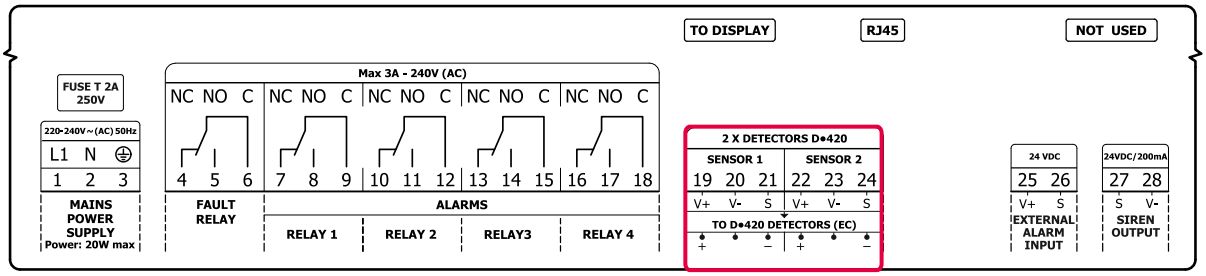
ⓘ In the event that the U•C2 unit is installed in an environment that contains sources of strong electromagnetic interference (transmitters, welding stations, switching relays, HF transmitters, cable runs or computer networks, etc.), it is preferable to use shielded cables to connect the detectors.

⚠ 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 definitely never in the same bundle or cable run.

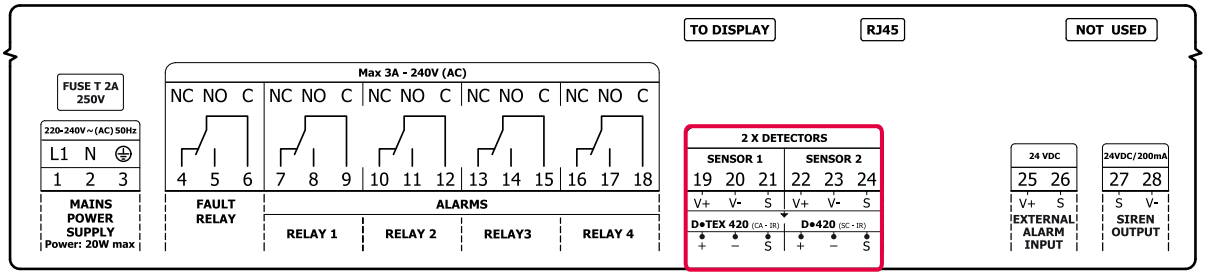
2.4.2 Two-Wire Current-Loop Detectors

Use a dual-conductor flex cable with a cross-sectional area of between 0.75 and 1.5 mm² to connect the D•420 electrochemical detector (e.g., NH3. See the diagram below).



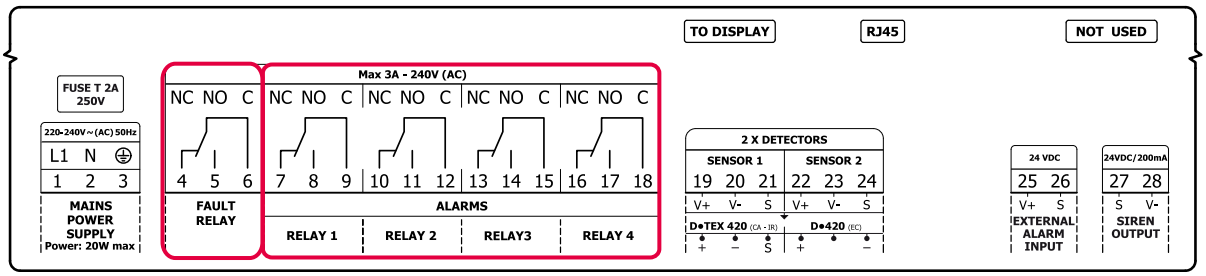
2.4.3 Three-Wire Current-Loop Detectors

Use a triple-conductor flex cable with a cross-sectional area of between 0.75 and 1.5 mm^2 to connect the D•420 infrared detector and the D•TEX 420 catalytic detector (e.g., propane/R-290 or CO2. See the diagram below).



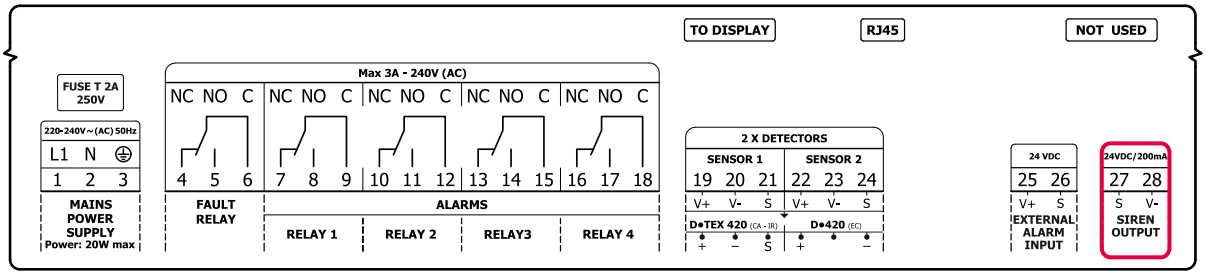
2.5 Connecting the Relays

The U•C2 unit has five relays that can be addressed by the alarms and a technical-fault relay. Different types of devices can be connected to these relays, such as air blowers or extractors, sirens, LED warning signs or flashing lights, etc.



2.6 Connecting the Siren

Connect the **S** and **V–** terminals on the siren to the U•C2 unit (Terminals 27 and 28, respectively). Respect the polarity to avoid damaging the siren.

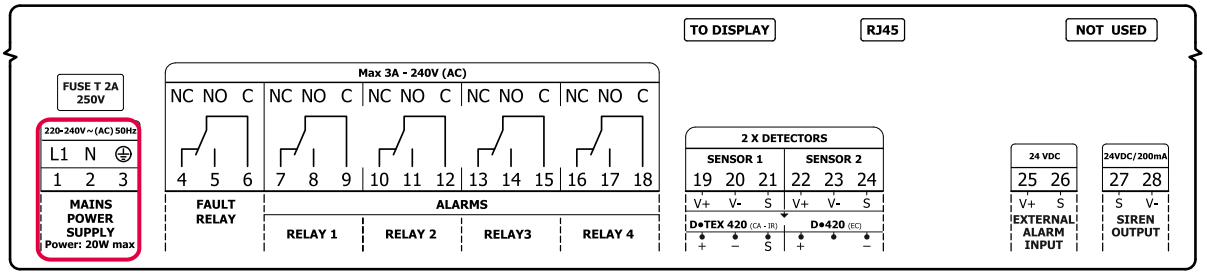


The cables used to connect the siren must meet the same requirements as the detector cable (see Connecting the Detectors).

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

2.7 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•C2 unit for maintenance (protection via a circuit breaker or double pole switch).

The power supplies for the U•C2 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•C2 unit is a Class-I device. The U•C2 unit must always be connected to the earth, in accordance with the instructions given in this manual.

2.8 First Start-Up

Before you power on your U•C2 unit, please ensure that the terminals have been tightened properly and the power voltage is in the acceptable operating range for the U•C2 unit.

⚠ Please contact **DALEMANS** 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 on 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 sound a short, uninterrupted sound.

All activated detection channels are in a “warm-up” state when the unit is turned on. The measurements on a channel in a warm-up state are ignored. The warm-up state has a finite duration which depends on the target gas configured.

3 CONFIGURATION

The configuration for the U•C2 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•C2 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•C2 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 signalled; fault mode, if a fault, but no alarms, have been signalled; or alarm mode if an alarm has been signalled.

3.1 Unit-Configuration Principle

The factory settings for the U•C2 unit are intended for underground car parks and may be changed depending on the intended use.

All the channels are deactivated in the factory. A detector-detection script must be run, so that all the channels to which detectors have been connected can be activated (see **Paragraph 5.4.3 Spotting the Detectors**).

A gas-detection system controlled by the U•C2 unit must be configured as follows:

1. Detect the detectors and activate the input channels
2. Select the appropriate "standard config."
3. **[Optional]** Select the target gases and alarm thresholds for each input channel
4. **[Optional]** Adjust the settings specific to the installation.

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

3.2 Addressing the Relays

Relay addressing involves connecting the alarm conditions configured with actions to open or close contacts on the alarm relays. Depending on the requirements of the installation, a standard configuration can be selected and, as a result, the appropriate devices can be activated in the event of a gas detection.

These standard configurations come as presets, which are stored in the unit's memory. A technician, who has been trained and certified by **Dalemans**, can activate the most appropriate standard configuration for the installation during commissioning.

3.2.1 Standard Factory Settings

The **REF01** configuration is active on the U•C2 unit when it leaves the factory and is delivered:

REF01			F	R1	R2	R3	R4
Channel #	Target gas & range	FAULT	✔				
Channel 1	Refrigerant 2000ppm	A1		✔	✔		
		A2				✔	✔
		-					
		-					
Channel 2	Refrigerant 2000ppm	A1		✔	✔		
		A2				✔	✔
		-					
		-					

A1 and A2 represent the respective alarm conditions for each input channel.

F, R1, R2, R3 and R4 represent the fault relay and the five alarm relays that can be addressed.

A ✔ symbol with an intersecting row and column indicates that the alarm condition in the row, if met, will activate the relay in the corresponding column.

Configuration description:

- The two detector input channels are configured to detect refrigerant gases with a range of measurement of 2000 ppm
- The four programmable relays are addressed as follows:
  - Relays 1 & 2 are addressed to level-one alarms on the six input channels
  - Relays 3 & 4 are addressed to level-two alarms on the six input channels
- The fault relay works in failsafe mode
- The alarm relays are configured in non-failsafe mode
- The input for an external alarm is not enabled

ⓘ Please contact a **DALEMANS** representative for more details about the other possible standard configurations.

3.2.2 Standard Configurations

a) Standard Configuration REF01

See standard factory settings

b) Standard Configuration REF02

REF02			F	R1	R2	R3	R4
Channel #	Target gas & range	FAULT	✔				
Channel 1	Refrigerant 2000ppm	A1		✔			
		A2			✔		
		-					
		-					
Channel 2	Refrigerant 2000ppm	A1				✔	
		A2					✔
		-					
		-					

c) Standard Configuration REF03

REF03			F	R1	R2	R3	R4
Channel #	Target gas & range	FAULT	✔				
Channel 1	Refrigerant 2000ppm	A1		✔			
		A2			✔		
		A3				✔	✔
		-					
Channel 2	Refrigerant 2000ppm	A1		✔			
		A2			✔		
		A3				✔	✔
		-					

d) Standard configuration REF04

Base standard configuration for two-zone systems. Relay 5 is addressed to A3-level alarms for both zones.

REF04			F	R1	R2	R3	R4
Channel #	Target gas & range	FAULT	✔				
Channel 1	Oxygen 25%vol.	A1		✔			
		A2			✔	✔	
		A3					✔
		-					
Channel 2	Oxygen 25%vol.	A1		✔			
		A2			✔	✔	
		A3					✔
		-					

3.3 Target Gases and Alarm Thresholds

Each configuration of the U•C2 unit comprises preset alarm thresholds for each target gas. These are saved in the unit's memory and may be assigned to each input channel.

The settings associated with a given target gas are as follows:

- **Target Gas name**: the name of the molecule or gaseous compound to be detected. The target gas selected for an input channel must correspond to the target gas for the connected detector
- **Range of Measurement**: in the event that gas is detected, this value corresponds to the full-scale measurement, i.e. the highest gas concentration that can be measured. The range of measurement selected on a channel must match the range of measurement for the connected detector
- **Unit of Measurement**: the physical value that characterises the signal measured
- **Number of Alarm Thresholds**: allows the user to define several alarm conditions with different threshold values or calculation methods

All the settings for a target gas that are used on one or more input channels apply to all of these input channels.

3.3.1 Target gases – 2 alarm levels

Target gases met in refrigerant gas detection application are numerous and diverse. The table below lists the configurations embedded into the control unit memory for "***2-Levels-Type***" (using 2 alarm levels by default):

TARGET GASES & ALARMS – 2 alarm levels type

Target gas**	Range	Alarm level 1 (A1*)			Alarm level 2 (A2*)			Alarm level 3 (A3*)		
		Threshold	Type	Latching mode	Threshold	Type	Latching mode	Threshold	Type	Latching mode
Refrigerant*	**1000 ppm**	100 ppm	Instant	Non-latching	500 ppm	Instant	Latching	-	-	-
Refrigerant*	**2000 ppm**	500 ppm	Instant	Non-latching	1000 ppm	Instant	Latching	-	-	-
Refrigerant*	**5000 ppm**	500 ppm	Instant	Non-latching	1000 ppm	Instant	Latching	-	-	-
Refrigerant*	**10000 ppm**	1000 ppm	Instant	Non-latching	5000 ppm	Instant	Latching	-	-	-
Flammable**	**100 %LEL**	20 %LEL	Instant	Non-latching	40 %LEL	Instant	Latching	-	-	-
NH3	**100 ppm**	10 ppm	Instant	Non-latching	50 ppm	Instant	Latching	-	-	-
NH3	**1000 ppm**	100 ppm	Instant	Non-latching	500 ppm	Instant	Latching	-	-	-
NH3	**5000 ppm**	1000 ppm	Instant	Non-latching	2000 ppm	Instant	Latching	-	-	-
CO2	**5000 ppm**	800 ppm	Instant	Non-latching	2000 ppm	Instant	Latching	-	-	-
CO2	**4 %vol.**	1 %vol.	Instant	Non-latching	2 %vol.	Instant	Latching	-	-	-

TARGET GASES & ALARMS – 2 alarm levels type										
Target gas**	Range	Alarm level 1 (A1*)			Alarm level 2 (A2*)			Alarm level 3 (A3*)		
		Threshold	Type	Latching mode	Threshold	Type	Latching mode	Threshold	Type	Latching mode
CO2	5 %vol.	1 %vol.	Instant	Non-latching	2 %vol.	Instant	Latching	-	-	-
O_2	25% vol.	19% vol.	Instant falling	Non-latching	17% vol.	Instant falling	Latching	-	-	-

* Alarm Levels: A1 is the alarm level 1, A2 is the alarm level 2, A3 is the alarm level 3.

** « Flammable » is a generic name that allows to target various flammable gases (e.g. : methane, propane, butane, hydrogen, …)

Measurement ranges not included in this list are not compatible with the exchange.

ⓘ Please contact your **DALEMANS** representative for more information.

3.3.2 Target Gases – 3 alarm levels

The target gases encountered in laboratories are numerous and diverse. The table below includes the information that is pre-saved in the unit:

TARGET GASES & ALARMS – 3 alarm levels type										
Target gas**	Range	Alarm level 1 (A1*)			Alarm level 2 (A2*)			Alarm level 3 (A3*)		
		Threshold	Type	Latching mode	Threshold	Type	Latching mode	Threshold	Type	Latching mode
Refrigerant	1000 ppm	100 ppm	Moyenne 15min	Non-latching	300 ppm	Instant	Non-latching	500 ppm	Instant	Latching
Refrigerant	2000 ppm	100 ppm	Moyenne 15min	Non-latching	500 ppm	Instant	Non-latching	1000 ppm	Instant	Latching
Refrigerant	5000 ppm	100 ppm	Moyenne 15min	Non-latching	500 ppm	Instant	Non-latching	1000 ppm	Instant	Latching
Refrigerant	10000 ppm	1000 ppm	Moyenne 15min	Non-latching	5000 ppm	Instant	Non-latching	2000 ppm	Instant	Latching
Flammable	100 %LEL	10 %LEL	Instant	Non-latching	20 %LEL	Instant	Latching	40 %LEL	Instant	Latching
O_2	25% vol.	19% vol.	Instant fallingt	Non-latching	17% vol.	Instant falling	Latching	22 %vol.	Instant rising	Latching

* Alarm Levels: A1 is the alarm level 1, A2 is the alarm level 2, A3 is the alarm level 3.

** « Flammable » is a generic name that allows to target various flammable gases (e.g. : methane, propane, butane, hydrogen, …)

Measurement ranges not included in this list are not compatible with the exchange.

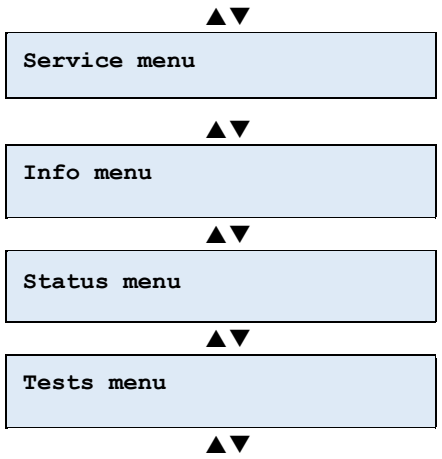
ⓘ Please contact your **DALEMANS** representative for more information.

4 USER MENUS

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

4.1 Main menu

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



Accessing the Services Menus

System Information

Status of System Components

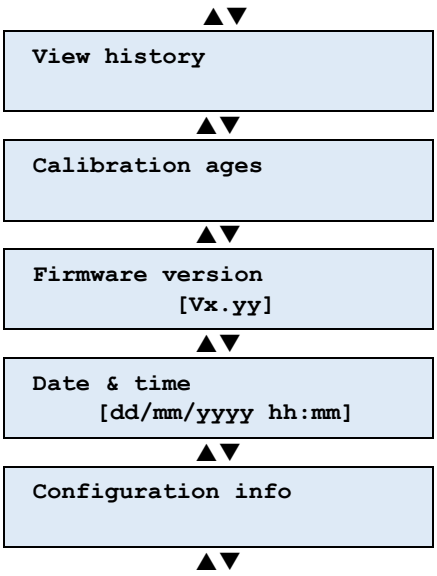
System Tests

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

4.2 Info Menu

The *Info menu* provides information about all the components of the U•C2 unit.

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



View Unit History

View the calibration age for each of the detectors

Unit Software Version

Unit Date and Time

Submenu providing the configuration information for the U•C2 unit

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 detectors were last calibrated. This allows the unit to generate a maintenance alert once the maintenance interval has been exceeded (see **Paragraph 5.2**)

4.2.3 Firmware Version

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•C2 unit are stored in Non-Volatile memory. They are only updated when the unit is powered.

If the date or time of the U•C2 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:

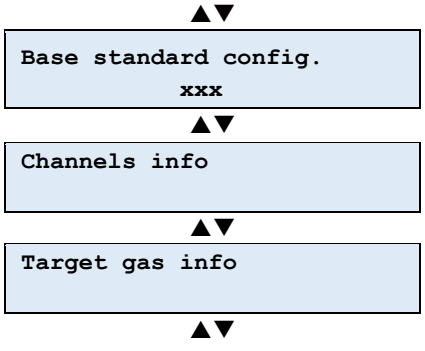
The user can change the value in the selected field using the **Up** and **Down** arrow keys.

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**.Configuration Information

4.3 Configuration information

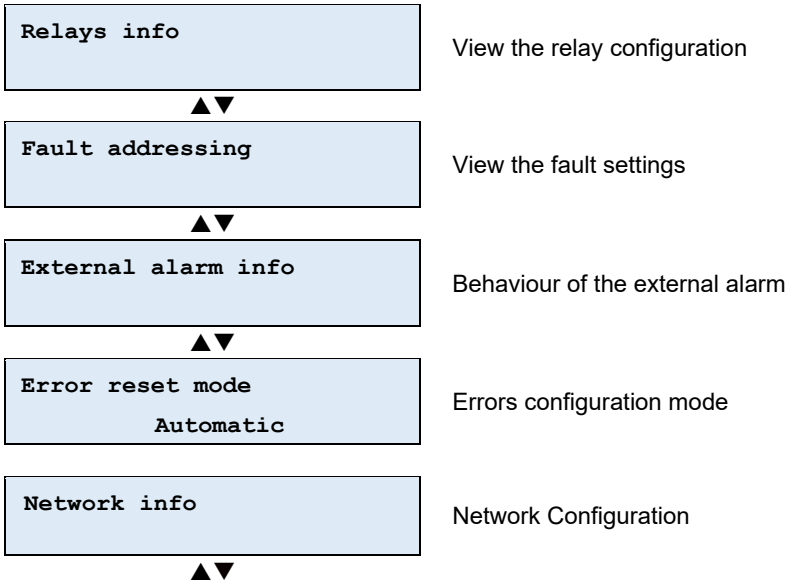
All the configuration items for the U•C2 unit can be consulted using the "*Configuration Info"* sub-menu, i.e.:



View the Standard Basic Configuration

View the Channel Settings for the Unit

View the settings that have been configured for the target gases



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

4.3.1 Base standard configuration

Navigation :

`Info menu` → `Configuration info` → `Base standard config.`

This is the base standard configuration, based on which the device was configured. The U•C2 is a device that allows a wide range of configurations.

Modifications to the configuration can be made following this selection.

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

4.3.2 Measurement Channels

Navigation :

`Info menu` → `Configuration info` → `Channels info`

This sub-menu allows the user to view the specific configurations for each channel.

```
1.Detector x
       Refr. 2000ppm
```

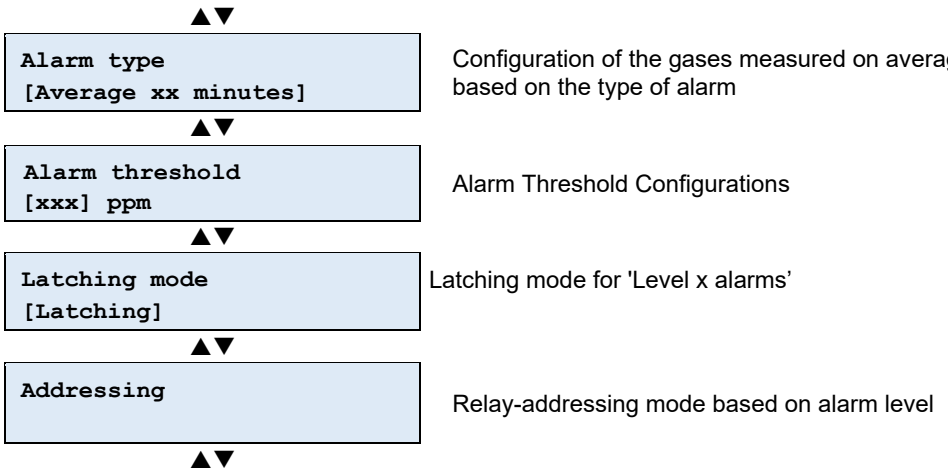
a) Alarm Level Settings by Channel

The information for the different alarm levels associated with the type of gas configured in the unit for each channel can also be consulted via the *Alarm Level Settings* sub-menu

```
Select alarm level
       Alarm level X
```

The **Up** and **Down** arrow keys allow the user to view the type of alarms configured in the U•C2 unit. When the user makes a selection using the **ENTER** key, the user can view the different configurations in the U•C2 unit by alarm level.

The items in the *Alarm Level Settings* sub-menu on the U•C2 unit allow the user to view the settings for the following:



ⓘ The *Alarm Threshold*, *Latching Mode* and *Addressing* sub-menus are only visible if the alarm level has been activated.

b) Alarm Type

Alarm Type allows the user to view the way in which the alarm is calculated:

- ***Disabled***: this alarm level is deactivated
- ***Instant***: this alarm level is based on the measurement at time t
- ***Average***: this alarm level is calculated based on an average over time (configurable). It is triggered when the calculated value exceeds the configured threshold.
- ***Above for xx minutes***: this alarm level is only triggered if the threshold is exceeded for at least xx minutes.

c) Alarm Thresholds

Alarm Threshold allows the user to view the value of the gas-concentration threshold for the selected alarm level.

```
Alarm threshold
          [xxxx PPM]
```

d) Latching Mode

Latching Mode allows the user to view the latching mode for the selected alarm level:

- **Latching**: when the cause of the alarm is gone, the alarm remains active until manual action is taken on the U•C2 unit (**RESET button pressed twice**).
- **Non-latching**: when the cause of the alarm is gone, the alarm is automatically reset and disappears.

ⓘ The U•C2 unit might display an alarm message when the gas concentration has already fallen below the alarm threshold, when the unit alarms are latched. An alarm based on an average over time may remain active when the measurement time *t* is below the threshold. It is normal for it not to be possible to reset the alarm in such a scenario. It will only be possible to reset the alarm when the average value falls below the configured threshold.

---

e) Relay Addressing by Input Channel

The user can use this menu to see the relay(s) that will be activated for each alarm level and for each input channel in the event that the alarm condition is met.

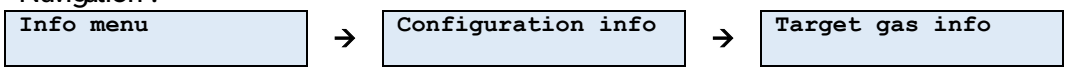
The following configurations are possible on the channel X, alarm level Y and relay Z menu:

- ***Not addressed***: the selected relay, Z, will not be activated based on the selected alarm, Y, for the selected channel, X.
- ***Addressed***: the selected relay, Z, will be activated when the alarm condition, Y, for channel X is met.
- **Siren Mode**: the selected relay, Z, will act like an output siren: the relay will be triggered when there is an alarm, but it will be possible to disarm it by pressing **MUTE/RESET** on the keyboard.

ⓘ The user can only view the configuration. Any modifications must be carried out by a technician certified by **DALEMANS SA/NV**.

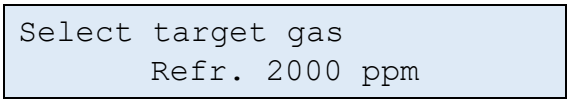
4.3.3 Target Gases

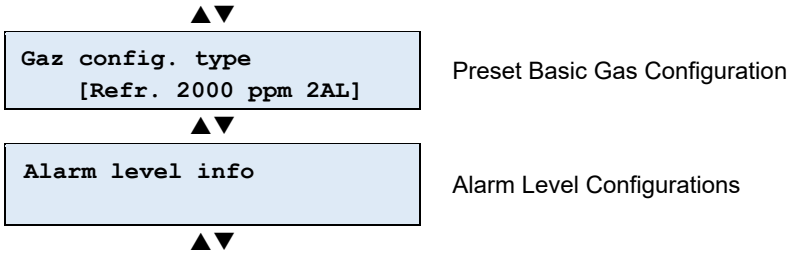
Navigation :



The U•C2 unit has a logic that is closely associated with the concept of “target gas”. A target gas can be linked with each input channel and the alarm levels are linked with each target gas. This logic allows the user to configure the control unit easily and systematically.

The items on this U•C2 unit sub-menu allow the user to see the different settings that are specific to each target gas targeted by one or more channels of the unit.





Preset Basic Gas Configuration

Alarm Level Configurations

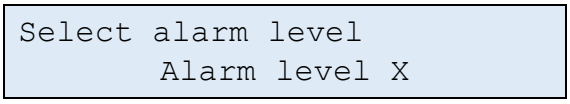
a) Target gas configuration

Gas config. type allows the user to view the standard used for the selected target gas. There are several of these:

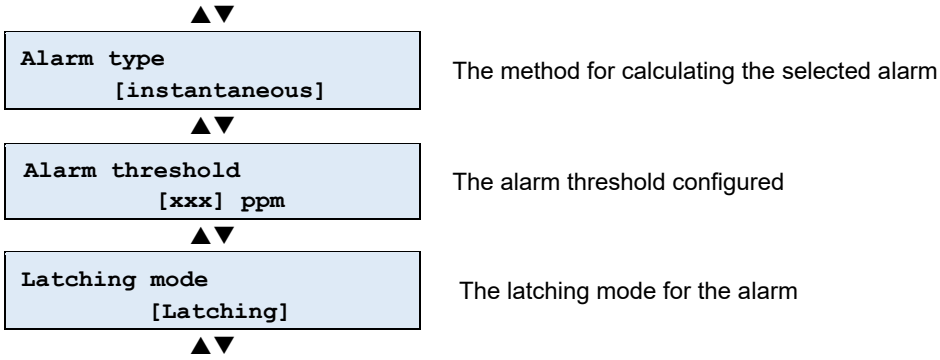
- ***2AL***: 2 alarm levels are preset. This is the default configuration
- ***3AL***: 3 alarm levels are preset.

b) Alarm Level Settings

The information for the different alarm levels associated with the type of gas configured in the unit can be accessed from the *Alarm Level Settings* sub-menu.



The following information is configured for each alarm level:



The method for calculating the selected alarm

The alarm threshold configured

The latching mode for the alarm

ⓘ The *Alarm Threshold* and *Latching Mode* sub-menus are only visible if the corresponding alarm level has been enabled.

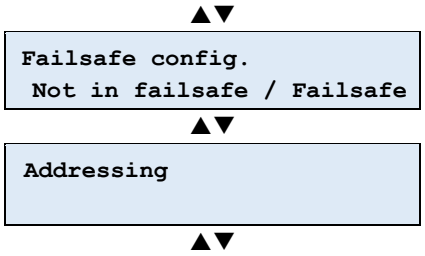
All the items in this menu are explained at paragraph **§ 3.3 Target Gases and Alarm Thresholds.**

4.3.4 Relay Configuration

Navigation :

`Info menu` → `Configuration info` → `Relays info`

The *Relay Info* sub-menu allows the user to view the configuration for each relay, i.e. the failsafe mode and addressing for it.



Failsafe Mode for the selected relay

Addressing of the selected relay

a) Relay Failsafe Mode

The failsafe mode of a relay defines its status when it is idle:

- ***Non-failsafe***: the relay is not powered when it is idle.
- ***Failsafe***: the relay is powered when it is idle.

ⓘ By default, all the relays are failsafe: OFF, except for the fault relay, which is always failsafe: ON.

b) Addressing

Addressing allows the user to view the addressing for the selected relay. Addressing is the set of conditions that activate a relay.

These conditions may be as follows:

- One or more alarm levels coming from one or more input channels
- Activation of the external alarm input
- *Fault*

```
Detector x
Ax - Normal mode / Siren mode
```

There are two ways for the user to act on a relay:

- **Normal mode**: the relay cannot be reset as long as the triggering condition is still active.
- **Siren mode**: comprises specific behaviour similar to that of the U•C2 unit's siren output or its buzzer, i.e. the relay can be reset when the triggering condition is still active.

If a relay **is not addressed by any**:

- *Detector*
- *External Alarm*
- *Fault*

```
Alarm relay x
Not addressed at all
```

ⓘ Any enabling or disabling of settings should be carried out by a technician certified by **DALEMANS**.

4.3.5 Fault Menu

Navigation :

`Info menu` → `Configuration info` → `Fault addressing`

The U•C2 unit has internal fault management – *Fault Menu*. If any unusual use of the U•C2 unit or a detector is detected, the system sends a notification via action on a relay that signals the technical fault, and the **Fault** LED lights up.

The following configurations are possible:

- ***Unaddressed:*** the selected programmable relay will not be activated by a technical fault.
- **Addressed**: the selected relay will switch when a technical fault is detected.
- **Siren Mode**: the selected relay, Z, will act like an output siren: the relay will be triggered when there is an alarm, but it will be possible to disarm it by pressing **MUTE/RESET** on the keyboard.

```
Alarm relay x
  Not addressed / addressed
```

ⓘ Any enabling or disabling of settings should be carried out by a technician certified by **DALEMANS**.

The U•C2 unit also has a dedicated output for connecting a DC-powered siren. It is possible to associate the activation of this output with the detection of a technical fault using the following setting:

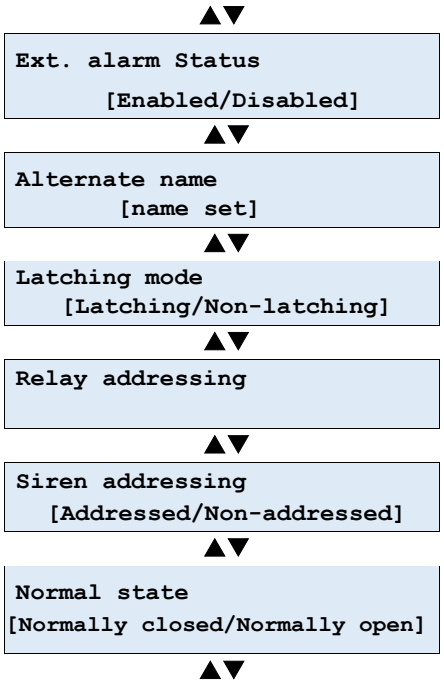
```
Siren output
  Not addressed / addressed
```

4.3.6 External Alarm Menu

Navigation :

Info menu → **Configuration info** → **External alarm info**

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



Status of the external alarm input: enabled/disabled

Allows the user to view the name given to the external alarm

Latching mode for the external alarm

Configuration of the addressing of relays that are potentially associated with the external alarm

Configuration of the addressing of the siren that is potentially associated with the external alarm

Normal status of the external alarm input

a) Status of the External Alarm

The external alarm can have the following statuses:

- ***Disabled***: a status change on the input will not have any effect
- ***Enabled***: a status change on the alarm input is triggered, based on the type of mode configured on the U•C2 unit

b) Alternate name

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
```

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.

d) Relay Addressing Mode from the External Alarm

Ext. Alarm Addressing allows the user to specifically address each relay, based on the activation of the external alarm:

```
Alarm relay x
  Not addressed / addressed
```

The **Up** and **Down** arrow keys allow the user to view the respective type of configuration mode for the external alarm in the U•C2 unit for each relay.

The way the U•C2 unit reacts to a change in status on the external alarm can be configured.

The following configurations are possible:

- ***Not addressed***: the selected relay will not be activated by the external alarm input.
- ***Addressed***: the selected relay switches when a change in the status of the external alarm input occurs.
- ***Siren Mode***: the selected relay, Z, will act like an output siren: the relay will be triggered when there is an alarm, but it will be possible to disarm it by pressing **MUTE/RESET** on the keyboard.

ⓘ Any enabling or disabling of settings should be carried out by a technician certified by **DALEMANS**.

e) Siren Addressing Mode 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.

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

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

f) Normal Status of the External Alarm

The external alarm, when enabled, is triggered by a change in status of its dedicated input on the U•C2 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.

4.3.7 Errors reset mode

The error reset mode setting specifies how the error events are reset:

- By default, errors events on the control unit are automatic/non-latching: they reset as soon as the error condition disappears

```
Error reset mode
Automatic
```

- Manual reset/latching

```
Error reset mode
Manual acknowledge
```

  In this mode, when the error condition disappears, the error message stays visible until the user manually acknowledges it by pressing **twice** on the **MUTE/RESET** button.

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

4.3.8 Network Info

Network Info is only available if the Ethernet interface has been enabled. This allows the user to view the following:

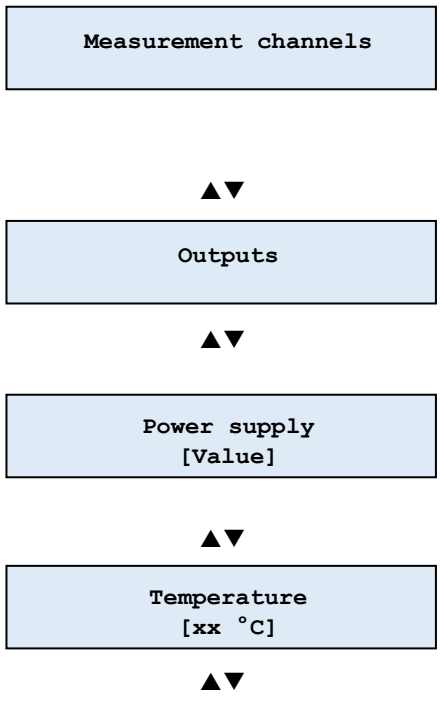
- The IP address of the U•C2
- The IP address of the network gateway

Those parameters allow to establish a connection with the control unit using MODBUS TCP

ⓘ More more information on the configuration and usage of the interface, please refer to *U•Line Network Interface Manual* document.

4.4 Statuses Menu

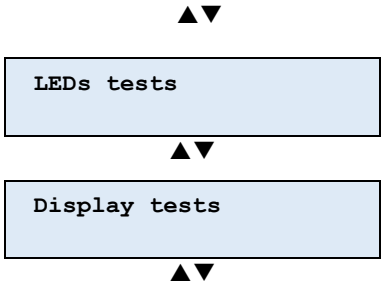
The *Statuses Menu* allows the user to view the status of the components of the U•C2 unit.



Sub-menu	Contents
Measurement Channels	Provides the statuses for each channel: - **Disabled**: the system considers this channel to be inactive - Measurement Display
Outputs	Provides the status of the outputs: - The system considers this output to be disabled - **enabled/disabled**
Power Supply	Indicates the status of the unit, i.e. connected to the mains or battery use, where applicable. The voltage of the unit is displayed when the user presses **ENTER**.
Temperature	Indicates the temperature of the U•C2 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 per usual while a test is being carried out.

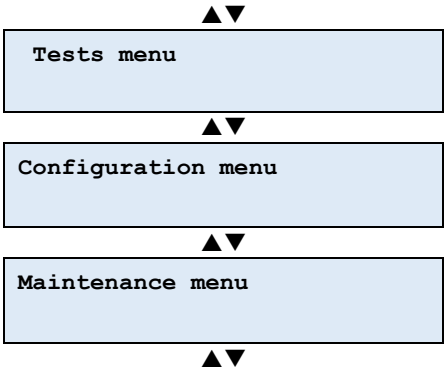


Sub-menu	Contents
LEDs tests	Run a test sequence that makes the LEDs blink one after another
Display tests	Run a test sequence that displays a character on each character position successively, while changing the display's backlight

5 SERVICE MENU

Service menus allow to modify the settings of the U•C2 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.



Advanced System Tests

Configuring the U•C2 Unit

Maintenance Management

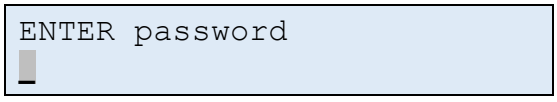
5.1 Protected Access

The Service Menu is protected by the following password:

Access code : 110

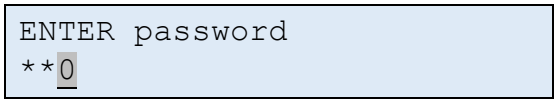
⚠ Do not use this password without reading the information contained in this manual. The functions on the Service Menu may affect the configuration of the unit!

When the user enters the Service Menu, the display enters into password-entry mode:



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.



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 System Tests

5.2.1 Outputs Tests

Navigation :

`Service menu` → `Tests menu` → `Outputs test`

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

⚠ Testing an output of the U•C2 unit means that it is activated, along with the servos that are connected to it (a gas valve or siren, etc.).

ⓘ 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.

▲▼

```
General fault relay
        Not activated
```

Technical-Fault Relay

▲▼

```
Alarm relay 1
        Not activated
```

Alarm Relay 1

▲▼

```
Alarm relay 2
        Not activated
```

Alarm Relay 2

▲▼

```
Alarm relay 3
        Not activated
```

Alarm Relay 3

▲▼

```
Alarm relay 4
        Not activated
```

Alarm Relay 4

▲▼

```
Siren output
        Not activated
```

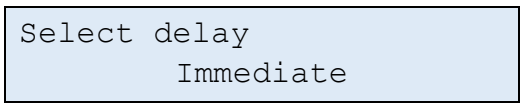
Transistorised output for the siren

▲▼

The user can confirm their selection by pressing **ENTER**. The system then asks for confirmation before switching the output.

Once the option to test the outputs has been selected, the "**Select delay**" sub-menu allows you to choose a delay in the activation of the relays.

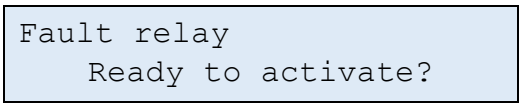
This makes it easier for a technician authorised by **DALEMANS sa/nv** to observe the correct operation of a control system connected to the U-C2 (e.g.: a gas valve, siren, etc.).



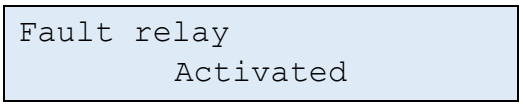
It is necessary to select the desired delay using the **Up** and **Down** keys.

The different delays are :

- Immediate: no delay;
- 1 minute ;
- 2 minutes ;
- 3 minutes;
- 10 minutes.



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.



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

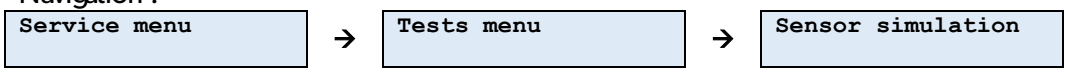
This comes to an end:

- 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 tests sub-menu is then re-enabled and displays the output test function.

5.2.2 Simulating a Detector

Navigation :



A gas-detection simulation can be carried out without disconnecting a detector that is connected to a measurement channel on the U•C2 unit.

Once the function has been selected, the user must select the detector for which the simulation should be carried out.

The simulation starts when the detector has been selected:

- 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 Configuring the Measurement Channels

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

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

a) Locating a Detector

Navigation :

`Service menu` → `Configuration menu` → `Channels menu` → `Channel location`

The location in the U•C2 unit allows the user to identify the detectors that are connected. By default, it is in the form **Detector x,** where x is the number for the detector input on the U•C2 unit.

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

- *Preset* Location
- *Custom* Location

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

i) Preset Locations

The U•C2 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 E: 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 customised or completely modified. The U•C2 unit enters Location Edit Mode when the Custom Location function has been selected.

```
Location channel 3
Channel 3
```

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**.

a) Setting a Detector to « Out of order »

Navigation :

Service menu → **Configuration menu** → **Channels menu** → **Out of order setting**

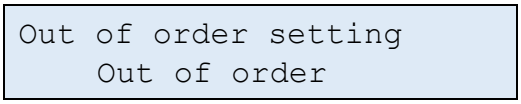
It may be useful to set a detector to offline while waiting for an authorised person to carry out a maintenance operation. When the **Out of order** function has been selected, the U•C2 unit shows the current status of the selected detector.

```
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 to offline by pressing **ENTER**. The technical-fault relay then switches on if it has not already switched.



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 considered to be a technical fault. This means that the fault relay switches!

5.3.2 Network Configuration

Navigation :

Service Menu → **Configuration menu** → **Network menu**

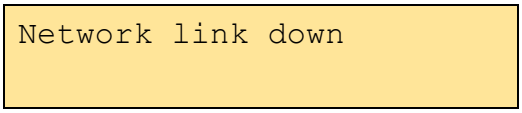
This menu is only available if the ethernet interface has been enabled. This allows the user to modify the following:

- the IP address of the U•C2 unit
- the IP address of the network gateway

The network configuration for the U•C2 unit is relatively streamlined. It is intended to work on a private network with mask 255.255.255.0. This means that only the last byte of the IP address of the gateway can be configured (the first three bytes are identical to the IP address and automatically updated).

ⓘ This menu is only available if the network interface has been enabled. The network interface may only be enabled by a technician certified by **DALEMANS**.

It should be noted that a Network Link Down fault is displayed if the ethernet interface of the U•C2 unit has been enabled and there is no connection upon start-up:



This fault is not critical and the technical-fault relay does not switch. The user can press **Reset** twice to clear the message from the screen. The ethernet interface is not operational in this case. If a cable has just been connected to it, the U•C2 unit should be restarted.

a) The IP Address of the Unit

Once this function has been selected, the IP address of the U•C2 unit is displayed in edit mode. The cursor flashes on the digit being edited:

```
IP address setting
    192.168. 16.171
```

The **Up** and **Down** arrow keys change the value of the digit being edited.

The **Right** and **Left** arrow keys allow the user to move from one digit in the IP address to the next. The first digit of each byte allows the user to modify the hundreds, the second digit allows the user to modify the tens and the third digit allows the user to modify the units.

Pressing **ENTER** ends the editing process for the network address. Confirmation is then requested:

```
Set IP address ?
     10. 10.  0. 10
```

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

Pressing **ENTER** confirms the configuration of the network address.

```
IP address set
    Please reboot !
```

ⓘ The editing of a network-configuration item requires the U•C2 unit to be restarted in order for it to take effect. This is why a request for the unit to be restarted is displayed.

ⓘ The unit does not need to be restarted after editing each network-configuration item individually. Several items may be edited before the U•C2 unit is restarted.

b) Network Gateway IP Address

The procedure for configuring the IP address for the network gateway is identical to the procedure for configuring the IP address for the U•C2 unit, except for the fact that only the last byte of the address can be edited. Since the network configuration has been streamlined, the first three bytes are identical to those of its IP address.

ⓘ The editing of a network-configuration item requires the U•C2 unit to be restarted in order for it to take effect. This is why a request for the U•C2 unit to be restarted is displayed.

ⓘ Several items may be edited before restarting the U•C2 unit.

5.4 Maintenance Management

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 in order to guarantee optimal monitoring. The user is therefore **strongly discouraged** from changing the value of this interval.

ⓘ 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

Navigation :

`Service menu` → `Maintenance menu` → `Maintenance interval [value]`

By default, the maintenance interval of detectors 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 be any interval ranging from **3** to **26 months**.

Once the maintenance-interval modification has been selected, the current interval configured in the U•C2 unit is displayed and the cursor flashes on the first digit of the value in months (the tens).

```
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**.

ⓘ In the event that a battery has been installed, a maintenance alert is also generated after four years. This interval cannot be modified.

5.4.2 Renewing the Validity of the Calibration.

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

In some specific cases, a 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 user can select the detector for which the validity of the calibration is to be renewed using the **Up** and **Down** arrow keys. Each 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.

```
1.Detector 1
    346 days   98%LEL
```

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.

```
1.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**.

5.4.3 Detecting the Detectors

Navigation :

`Service menu` → `Configuration menu` → `Sensor detection`

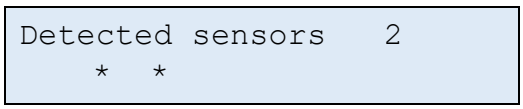
The factory settings of the U•C2 unit disable all the channels. The U•C2 unit then needs to be told how many detectors are actually connected.

This sub-menu can be used to get the U•C2 unit to verify the channels and display the situation as it sees it.

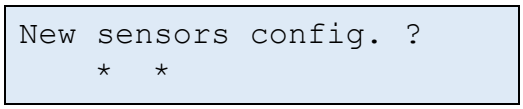
Detection and Calibration Phase

- 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.

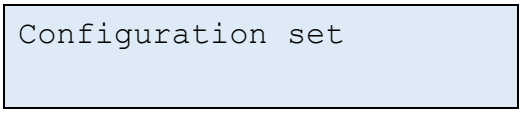
The number of detectors detected and calibrated is also displayed:



The U•C2 unit asks for confirmation of the detected configuration:



Once the user has confirmed this by pressing **ENTER**, the detected configuration is loaded into the U•C2 unit. It is now operational. 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•C2 unit	03165
U•C2 cover with display	03168
U•C2 motherboard	03019
Flat IDC female cable, 20-track IDC base, 5.91", 300 mm, step 2.54	00793
Housing for U•Line unit (base)	01036
Feet kit for fixing U•Line units	01040
DIN rail fixing kit for U•Line units	01041

7 PRODUCT SPECIFICATIONS

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

U•C2 control unit		
Power supply	Mains	220-240 V ~ (AC) 50Hz
	Power	20 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)	264 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 mm² or 2 x 1.5 mm² per terminal
Inputs	Detectors	2
	Type of detector	4..20mA Current loop detectors from Dalemans product range
	Wiring length	Up to 300 m
	Self-powered external alarm input 24V (DC)	1
Outputs	Alarms: Addressable changeover relays Max. 230V / 3A	4
	Fault: changeover relay Max. 230V / 3A	1
	Transistor alarm	24 V (DC) - 200 mA max.
	Digital interface	Modbus TCP via Ethernet
Interface	Display	LCD backlighting of a variable colour
	Power indicator	Green LED
	Inhibition indicator	Yellow LED
	Fault indicator	Yellow LED
	Navigation and configuration	Using a membrane keypad
Main features	Technical fault indicator	Up to 4 by target gas
	Navigation and configuration	YES
	Configurable alarm levels	YES
	Access protection using password	YES
	Maintenance alert	YES
	Display of events and statuses	YES
Operating conditions	Operating temperature	-10°C to +40°C
	Humidity	10 to 90% RH (non-condensing)
	Atmospheric pressure	90 – 110kPa
	Altitude	Max. 2000 m
Certification	Electromagnetic compatibility (EMC)	EN 50270 (type 1)
	Low-voltage safety	EN 61010-1
	Software and digital technology standard	EN 50271 (ongoing)
	Marking	CE, RoHS

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

A. EVENT MESSAGES

MESSAGE
System startup
activated
reset
Reset alarms action
Reset errors action
History cleared
menu timeout expired
Configuration saved
Date & time setting
System date saved
Calibration starts
End of calibration
Calibration saved
Calibration failure
Calibration timeout
Calibration cancelled
Maintenance interval setting
Calibration data renewed
Calibration age saved
enabled
disabled
Channel out of order
Channel in order
Set location preset
Set custom location
Set standard configuration
User configuration level
Technician configuration level
Invalid password entered
Maintenance requested
Battery change needed
start test
end of test
test timeout
Outputs inhibited
Outputs de-inhibited
Simulation started
Simulation stopped
Switch to battery
Switch back to AC supply
Unset battery
New battery installed
Battery age reset
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

MESSAGE
not addressed by external alarm
addressed by external alarm
addressed as siren by external alarm
alternate name changed
siren addressing changed
normal state changed
Sensors detection
Sensor detected
No sensor detected
Sensors detection interrupted
The network interface is activated
The network interface is disabled
The IP address is changed
The gateway IP address is changed
The way the errors are reset is changed
Configuration updated
System halted
System restarted
ADC reset
Password changed
Calibration renewal authorized
Calibration renewal not authorized
Set new target gas
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
Disable alarm level 3
Disable alarm level 4
Addressing of alarm relay changed
Addressing from the channel changed
not addressed by fault
addressed by fault
addressed as siren by fault
Modbus connection
Modbus disconnection

B. ERROR MESSAGES

MESSAGE	PROBABLE CAUSE	TROUBLESHOOT
No error	-	-
Flash memory integrity error	Troubles occurred with the non-volatile memory	U•C2 control unit maintenance
Display not ready	Troubles occurred with the display board	U•C2 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•C2 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		
Date & time setting error	The operation failed	Retry. If the error is persistent, U•C2 control unit maintenance
System configuration initialization error	Something went wrong during initialization	Reboot. If the error is persistent, U•C2 control unit maintenance
Core configuration load error		
History initialization error		
Date initialization error		
ADC calibration error	Data acquisition failed	U•C2 control unit maintenance
ADC conversion (internal) error		
ADC conversion (config.) error		
ADC conversion (DMA) error		
ADC conversion timeout		

MESSAGE	PROBABLE CAUSE	TROUBLESHOOT
Invalid core configuration	Something went wrong in memory	U•C2 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		
Network link down	A network connection is expected. The fault relay is not affected	Check the network connection. Once the problem is solved, the U•C2 control unit must be restarted
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 (mainly due to a power supply failure)	If another trouble is observed, resolve it first. If the error is persistent, U•C2 control unit maintenance
System configuration update failure	-	For technician only
Core configuration update failure		
Calibration renewal authorize failure	The operation failed	Retry. If the error is persistent, U•C2 control unit maintenance
Sensor error	The detector is in error	Check the detector and its connection to the U•C2 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•C2 control unit maintenance
Calibration failed		
Calib. interrupted		

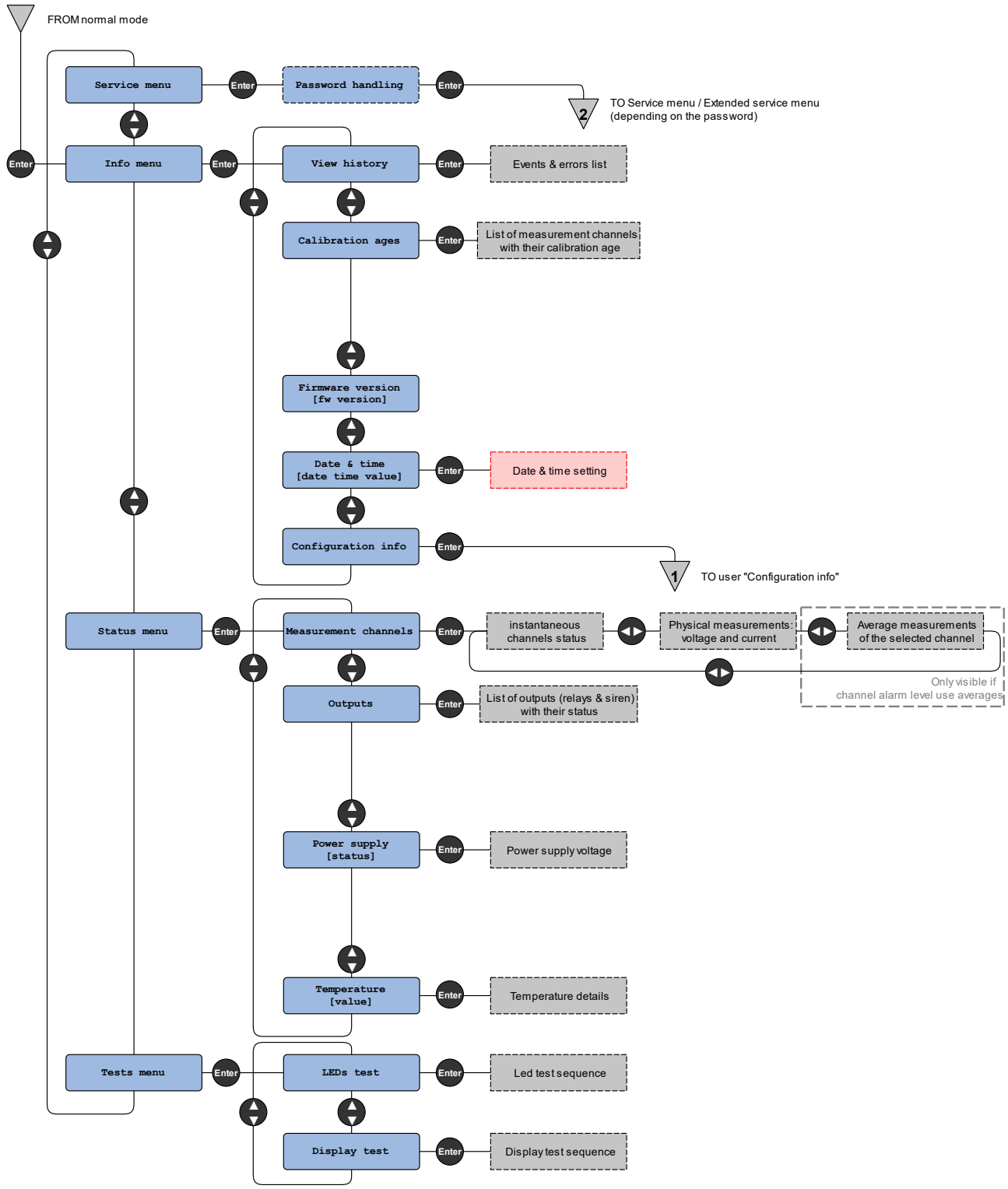
C. PREDEFINED LOCATIONS

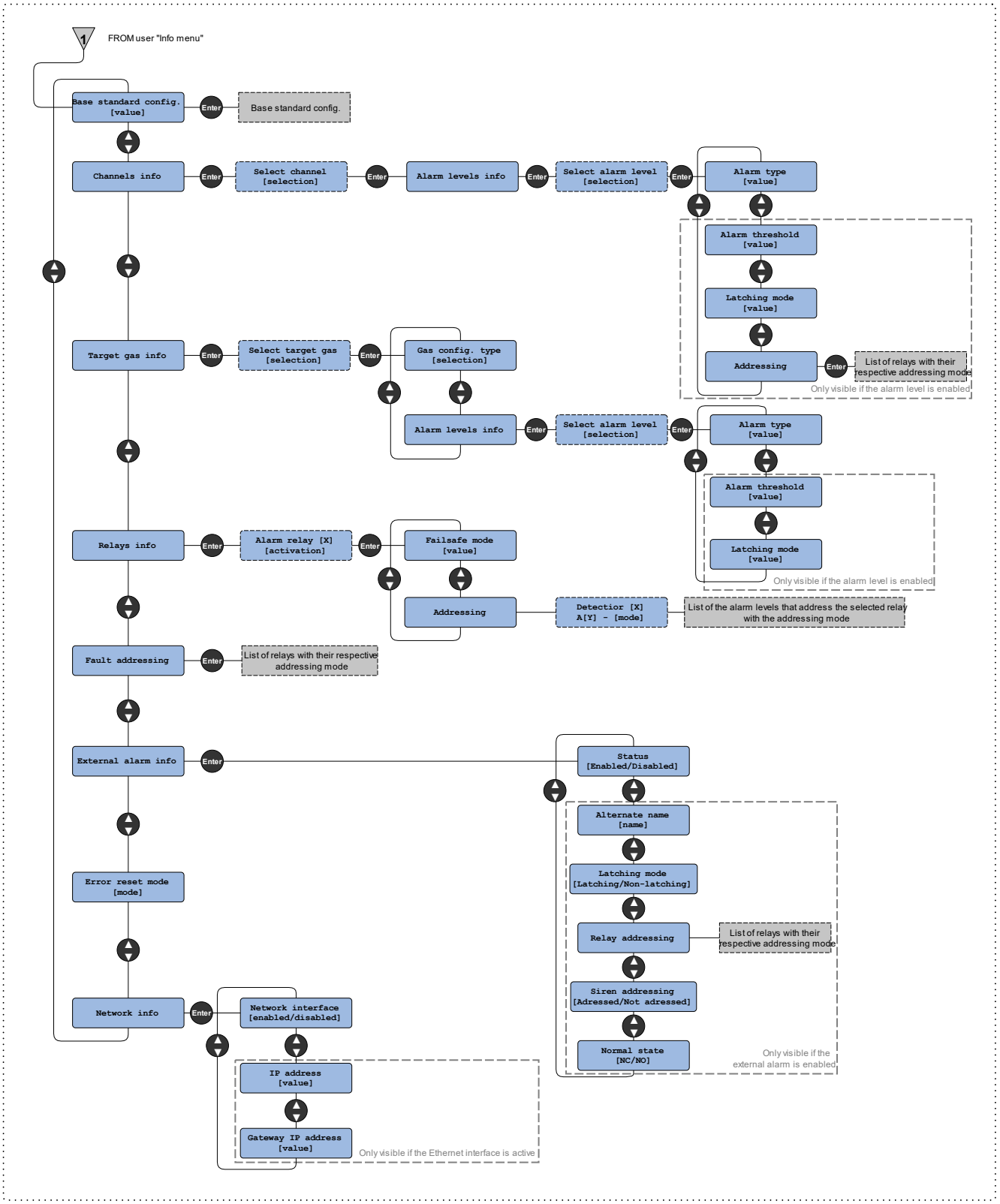
ENGLISH TEXT	TEXTE FRANÇAIS	NEDERLANDSE TEKST
Detector	Détecteur	Detector
Room	Local	lokaal
Compressor	Compresseur	Compressor
Booth	Cabine	Kajuit
Pipe	Conduite	Pijp
Cold room	Local froid	Koelruimte
Exchanger	Echangeur	Wisselaar
Gas valve	Vanne gaz	Gasklep
Refrigerator	Frigo	Koelkast
Storage	Stockage	Opslag
Technical room	Local technique	Technische ruimte
Air-conditioning	Air-conditionné	Klimaatregeling
Zone	Zone	Zone
HFO1234xx	HFO1234xx	HFO1234xx
R12	R12	R12
R123	R123	R123
R123a	R123a	R123a
R1234	R1234	R1234
R1234a	R1234a	R1234a
R1234xx	R1234xx	R1234xx

D. CHARACTERS AVAILABLE FOR TEXT EDITION

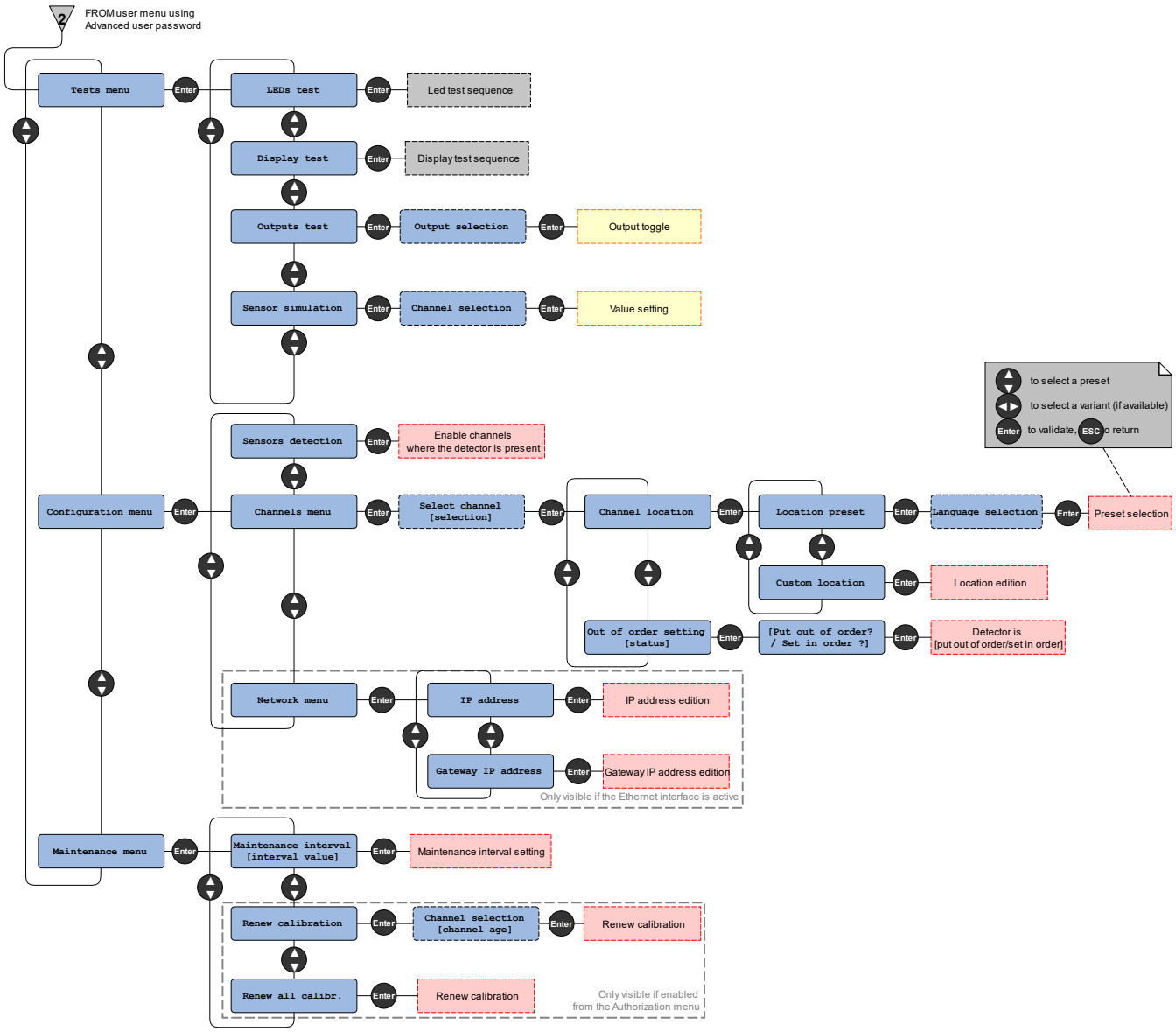
- The numbers **0 - 9**
- The letters of the **alphabet lowercase**
- The letters of the **alphabet in uppercase**
- **Vowels with accents** and **ç** in lowercase
- The **dash** and the special character **@**

E. USER MENU DIAGRAM




1
FROM user "Info menu"
Base standard config. [value]
Enter
Base standard config.
Channels info
Select channel [selection]
Alarm levels info
Select alarm level [selection]
Alarm type [value]
Alarm threshold [value]
Latching mode [value]
Addressing
List of relays with their respective addressing mode
Only visible if the alarm level is enabled
Target gas info
Select target gas [selection]
Gas config. type [selection]
Relays info
Alarm relay [X] [activation]
Failsafe mode [value]
Detectior [X] A[Y] - [mode]
List of the alarm levels that address the selected relay with the addressing mode
Fault addressing
List of relays with their respective addressing mode
External alarm info
Status [Enabled/Disabled]
Alternate name [name]
Latching mode [Latching/Non-latching]
Relay addressing
Siren addressing [Adressed/Not adressed]
Normal state [NC/NO]
Only visible if the external alarm is enabled
Error reset mode [mode]
Network info
Network interface [enabled/disabled]
IP address [value]
Gateway IP address [value]
Only visible if the Ethernet interface is active

F. SERVICE MENU DIAGRAM



U•C2

ALARM CONTROL UNIT FOR
REFRIGERANT GASES

INSTRUCTION MANUAL

DALEMANS®

GAS DETECTION

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