Danfoss 148R9637 Gas Detection Controller Unit Installation Guide

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Danfoss 148R9637 Gas Detection Controller Unit

Product Specifications:

- Controller unit and expansion module
- Up to 7 expansion modules per controller
- Up to 96 sensors connected via Field bus per controller
- Maximum cable length per segment: 900m
- Resistor 560 Ohm 24 V DC required for each address

Product Usage Instructions

Installation:

1. Ensure the controller unit and expansion module are securely connected.
2. Connect up to 7 expansion modules to the controller unit.
3. Connect up to 96 sensors via Field bus per controller.
4. Ensure each address has a Resistor 560 Ohm 24 V DC connected.

Wiring Configuration:

1. Follow the specified wiring configuration for output bus to PLC.
2. Make sure to connect the power, Field Bus, analog input/output, and digital input/output as per the provided guidelines.

Field Bus Connection:

1. Connect X10 Power/Main Bus to the designated terminals.
2. Connect Field Bus_A and Field Bus_B to the respective terminals.
3. Ensure proper connection of analog and digital inputs/outputs.

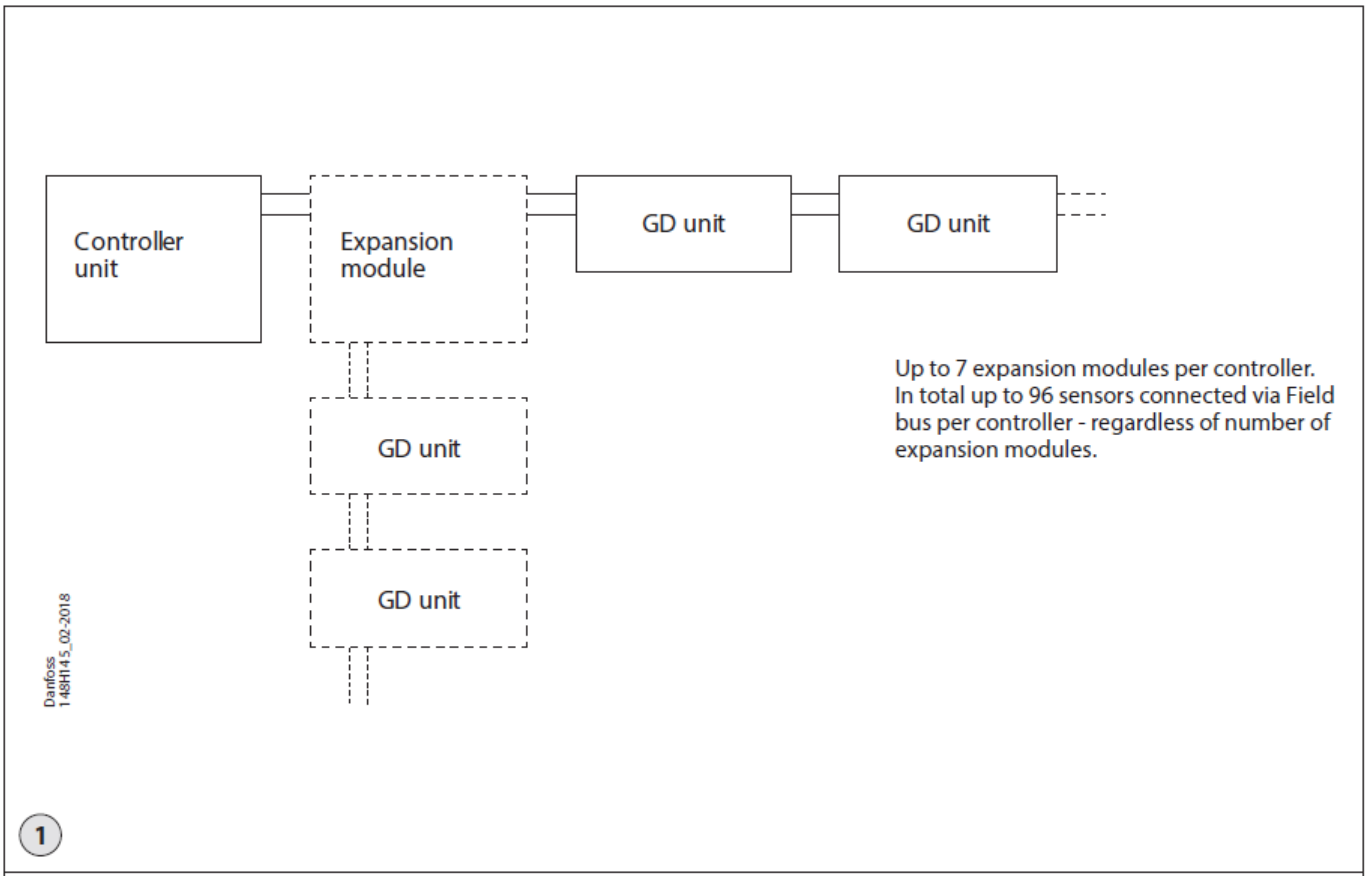
Power Supply:

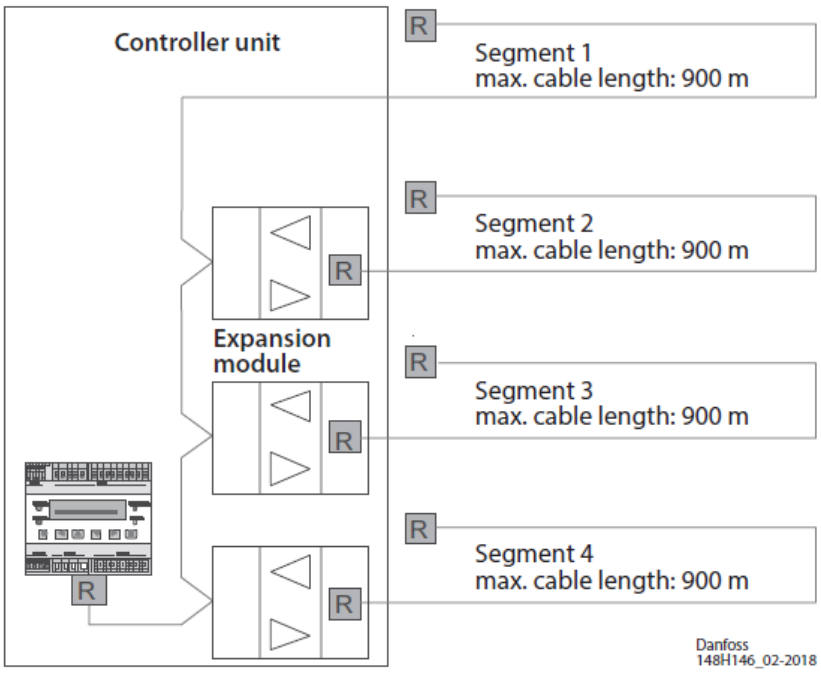
1. Use a power supply of 230 V AC with 0V and +24 V.
2. Check and connect X11 for proper power distribution.

Frequently Asked Questions (FAQ):

- Q: What is the maximum number of expansion modules that can be connected to a controller unit?
  A: Up to 7 expansion modules can be connected to a controller unit.
- Q: How many sensors can be connected via Field bus per controller?
  A: Up to 96 sensors can be connected via Field bus per controller, regardless of the number of expansion modules.
- Q: What is the required resistor specification for each address?
  A Resistor 560 Ohm 24 V DC is needed for each address.

Controller unit and expansion module





R = Resistor 560 Ohm
24 V DC for each address is needed

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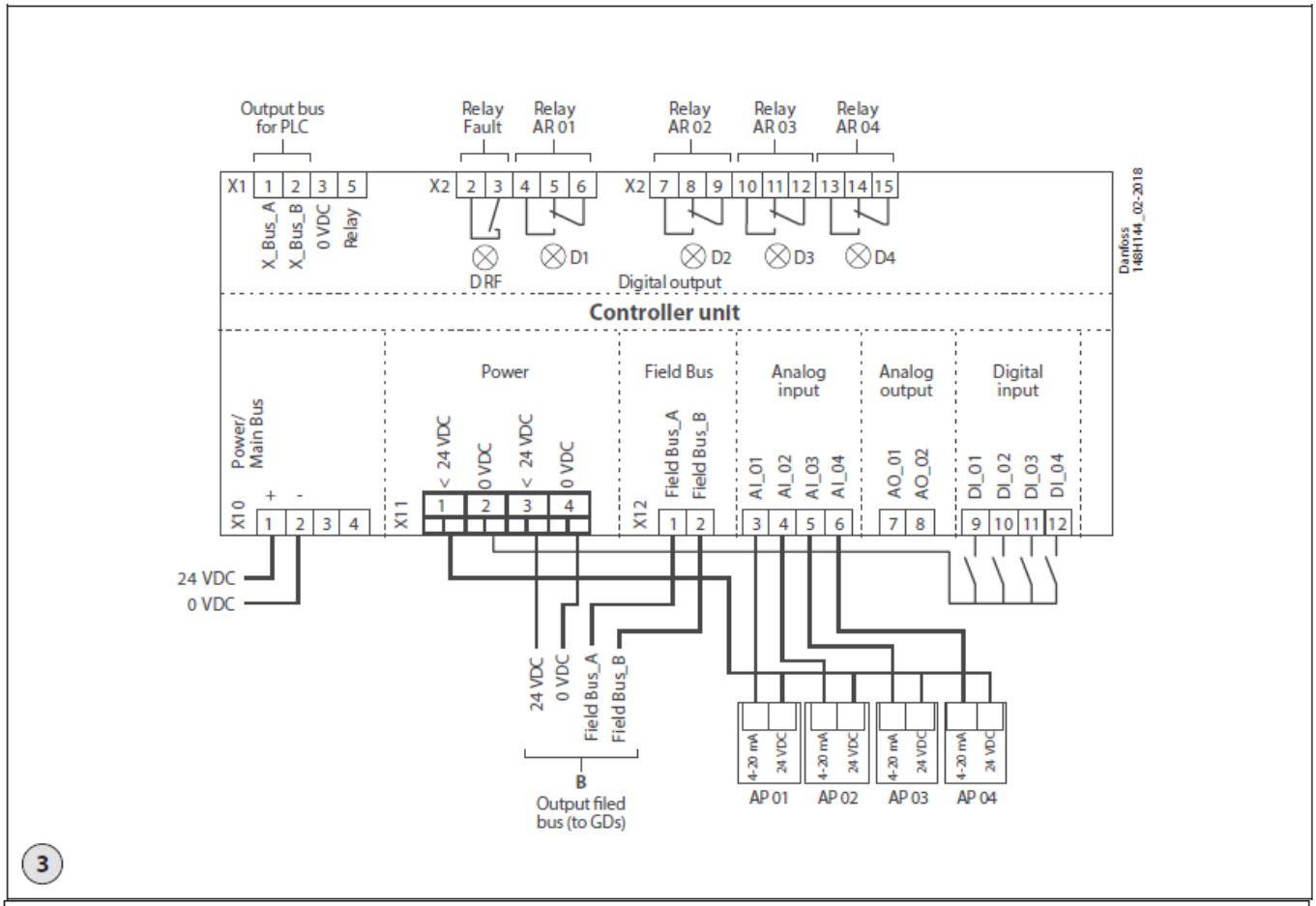
Wiring configuration



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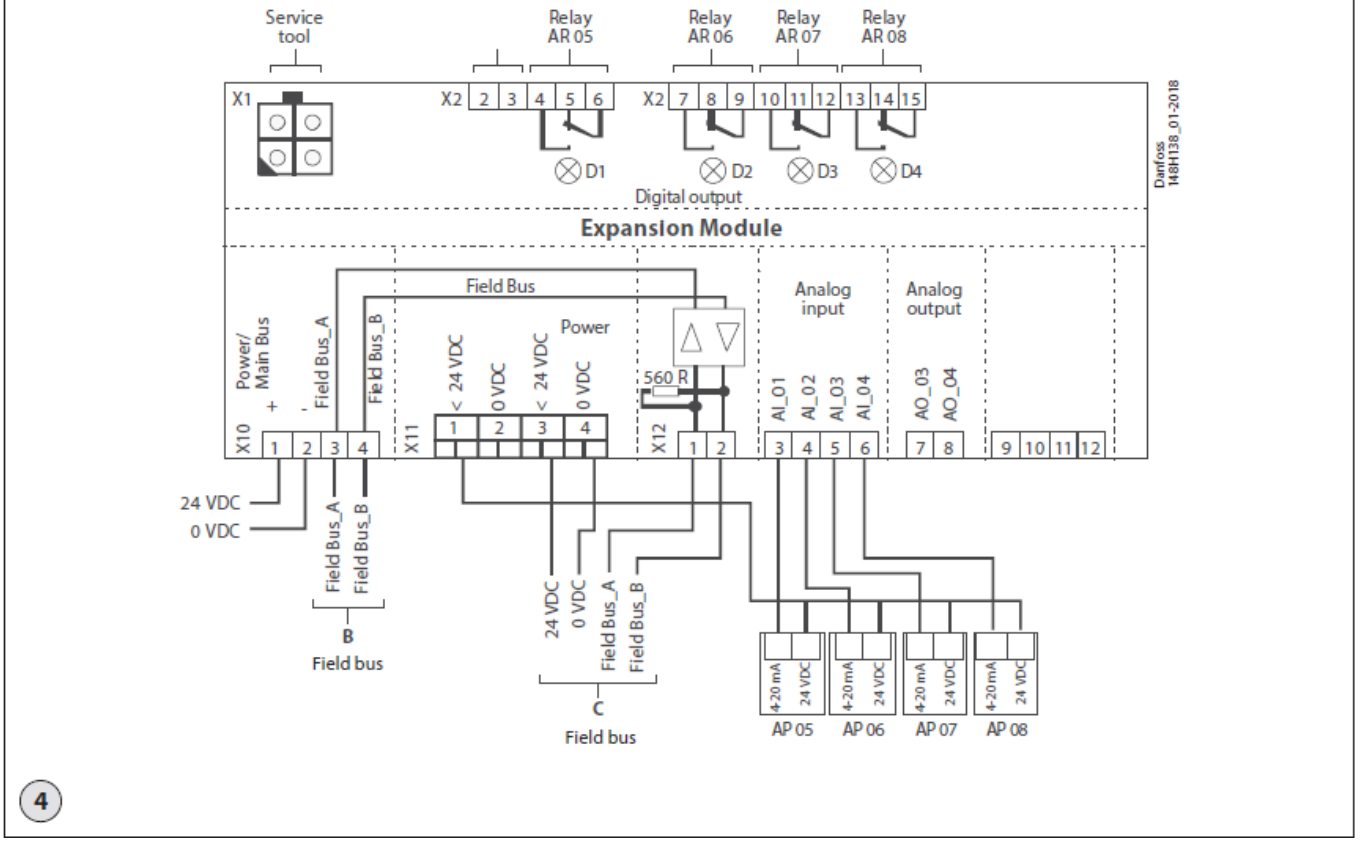

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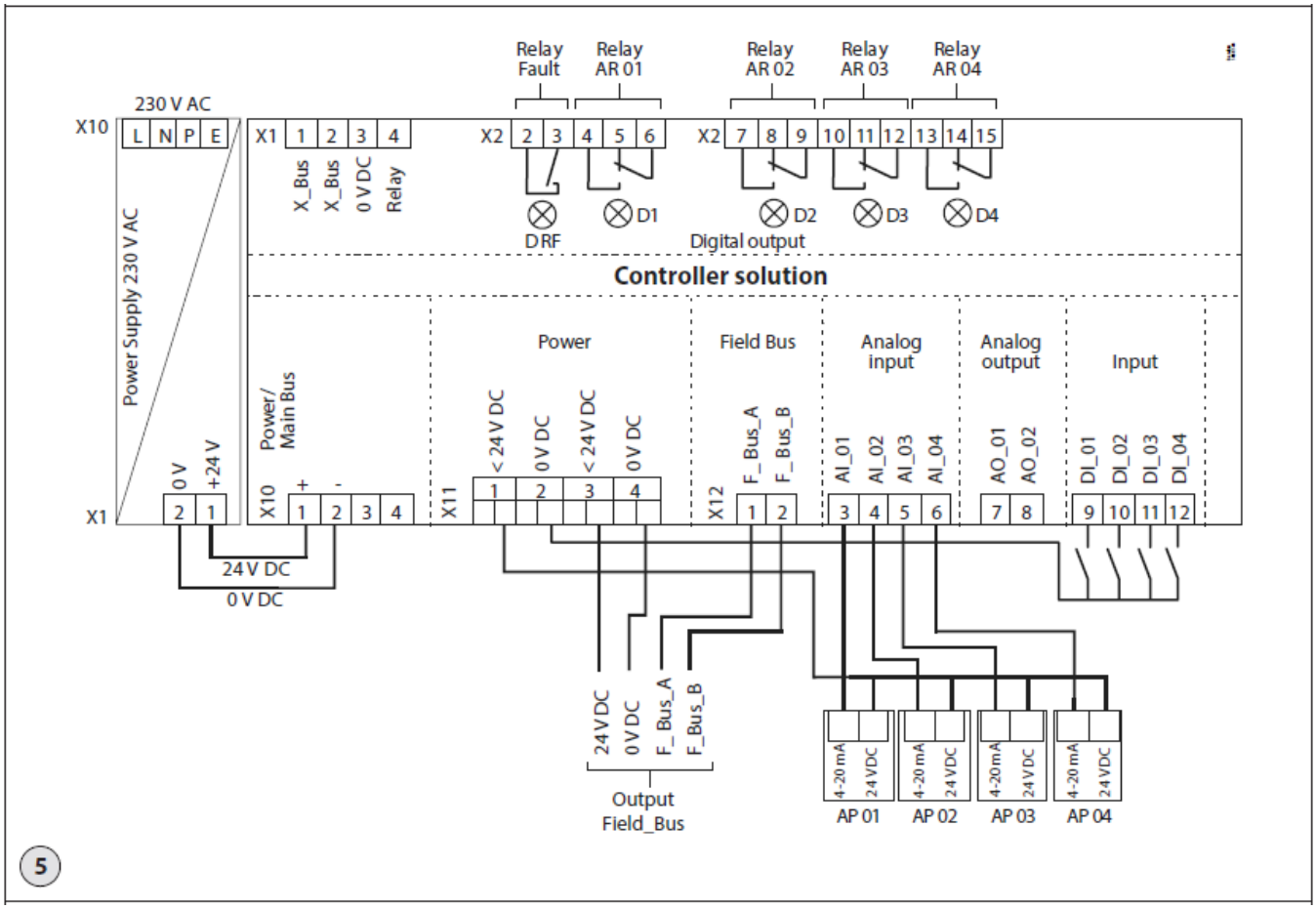
Controller Solution



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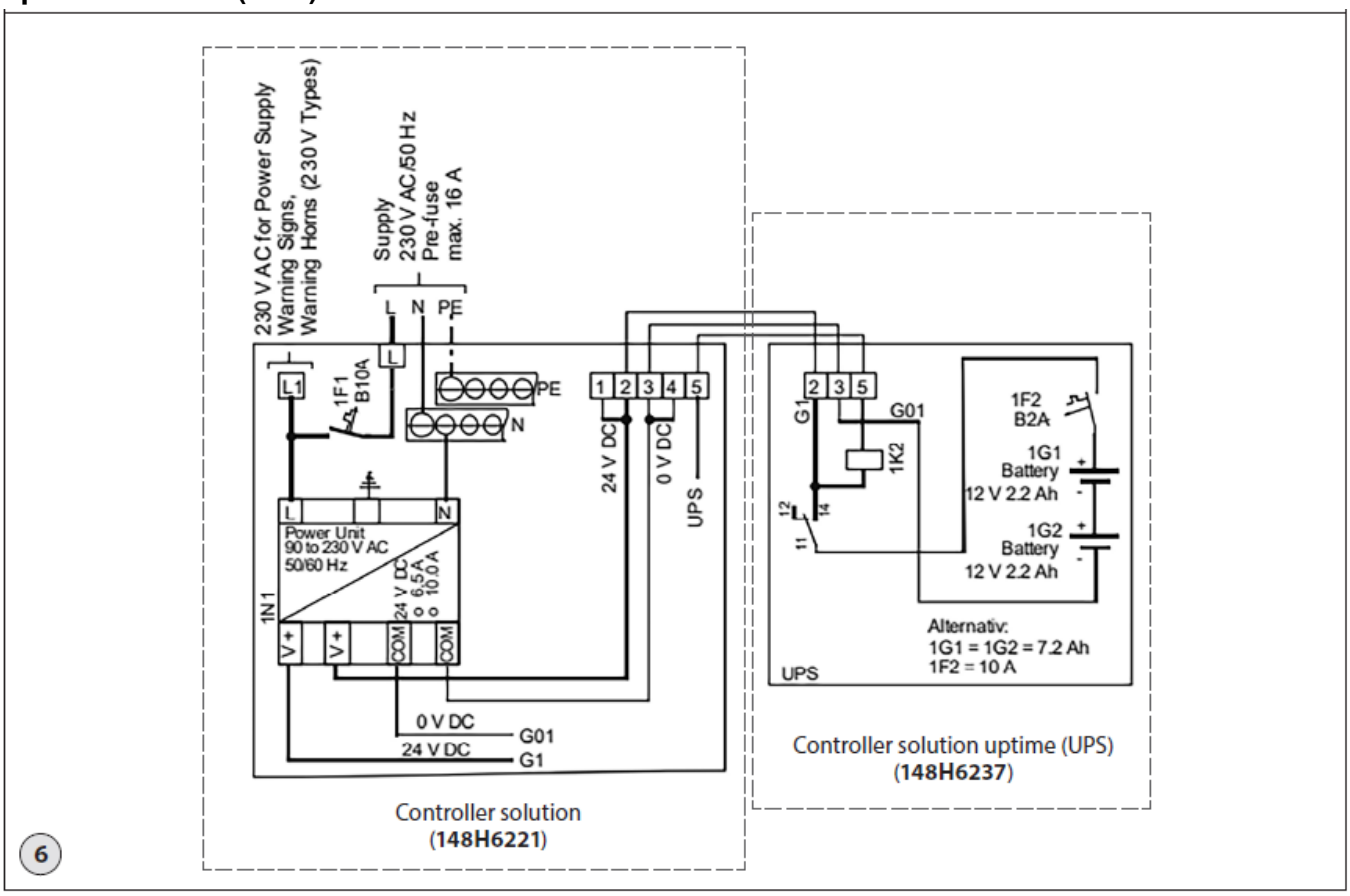
Uptime solution (UPS)



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Application Intended for Use

The Danfoss gas detection controller unit is controlling one or multiple gas detectors, for monitoring, detection and warning of toxic and combustible gases and vapours in the ambient air. The controller unit meets the requirements according to EN 378, VBG 20 and the guidelines “Safety requirements for ammonia (NH˜) refrigeration systems”. The controller can also be used for monitoring other gases and measuring values. The intended sites are all areas being directly connected to the public low voltage supply, e.g. residential, commercial and industrial ranges as well as small enterprises (according to EN 5502). The controller unit may only be used in ambient conditions as speciÿed in the technical data. The controller unit must not be used in potentially explosive atmospheres.

Description

The controller unit is a warning and control unit for the continuous monitoring of di˛erent toxic or combustible gases and vapours as well as of Freon refrigerants. The controller unit is suitable for the connection of up to 96 digital sensors via the 2-wire bus. Up to 32 analog inputs for the connection of sensors with 4 – 20 mA signal interface are available in addition. The controller unit can be employed as pure analog controller, as analog/digital or as digital controller. The total number of connected sensors, however, may not exceed 128 sensors. Up to four programmable alarm thresholds are available for each sensor. For binary transmission of the alarms there are up to 32 relays with potential-free change-over contact and up to 96 signal relays. Comfortable and easy operation of the controller unit is done via the logical menu structure. A number of integrated parameters enables the realisation of various requirements in the gas measuring technique. Conÿguration is menu driven via the keypad. For fast and easy conÿguration, you can use the PC Tool. Prior to commissioning please consider the guidelines for wiring and commissioning of the hardware.

Normal Mode:
In normal mode, the gas concentrations of the active sensors are continuously polled and displayed at the LC display in a scrolling way. In addition, the controller unit continuously monitors itself, its outputs and the communication to all active sensors and modules.

Alarm Mode:

- If the gas concentration reaches or exceeds the programmed alarm threshold, the alarm is started, the assigned alarm relay is activated and the alarm LED (light red for alarm 1, dark red for alarm 2 + n) starts to ˝ash. The set alarm can be read from the menu Alarm Status.
- When the gas concentration falls below the alarm threshold and the set hysteresis, the alarm is automatically reset. In latching mode, the alarm must be reset manually directly at the alarm triggering device after falling below the threshold. This function is obligatory for combustible gases detected by catalytic bead sensors generating a falling signal at too high gas concentrations.

Special Status Mode:

- In the special status mode there are delayed measurements for the operation side, but no alarm evaluation.

The special status is indicated on the display and it always activates the fault relay.
The controller unit adopts the special status when:

- faults of one or more active devices occur,
- the operation starts up after return of voltage (power on),
- the service mode is activated by the user,
- the user reads or changes parameters,
- an alarm or signal relay is manually overridden in the alarm status menu or via digital inputs.

Fault Mode:
If the controller unit detects an incorrect communication of an active sensor or module, or if an analog signal is outside the admissible range (< 3.0 mA > 21.2 mA), or if there are internal function errors coming from the self-control modules incl. watchdog and voltage control, the assigned fault relay is set and the error LED starts to ˝ash. The error is displayed in the menu Error Status in clear text. After removal of the cause, the error message must be acknowledged manually in the menu Error Status.

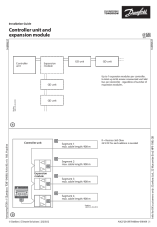
Restart Mode (Warm-up Operation):
Gas detection sensors need a running-in period, until the chemical process of the sensor reaches stable conditions. During this running-in period the sensor signal can lead to an unwanted release of a pseudo alarm. Depending on the connected sensor types, the longest warm-up time must be entered as power-on time in the controller. This power-on time is started at the controller unit after switching on the power supply and/or after the return of voltage. While this time is running out, the gas controller unit does not display any values and does not activate any alarms; the controller system is not yet ready for use. The power-on status occurs on the ÿrst line of the starting menu.

Service Mode:

- This operation mode includes commissioning, calibration, testing, repair and decommissioning.
- The service mode can be enabled for a single sensor, for a group of sensors as well as for the complete system. In active service mode pending alarms for the concerned devices are held, but new alarms are suppressed.
- UPS Functionality (option – additional accessory: Controller solution uptime)
- The supply voltage is monitored in all modes. When reaching the battery voltage in the power pack, the UPS function of the controller unit is enabled and the connected battery is charged.
- If the power fails, the battery voltage drops down and generates the power failure message.
- At empty battery voltage, the battery is separated from the circuit (function of deep discharge protection). When the power is restored, there will be an automatic return to the charging mode.
- No settings and therefore no parameters are required for the UPS functionality.
- In order to access the user manual and menu overview, please go to further documentation.

Further documentation:

Documents / Resources

	Danfoss 148R9637 Gas Detection Controller Unit [pdf] Installation Guide 148R9637 Gas Detection Controller Unit, 148R9637, Gas Detection Controller Unit, Detection Controller Unit, Controller Unit

References

- User Manual