



Operating Manual

# LDM250/LDM450/LDM650

## Low Voltage

**Multipoint unit**

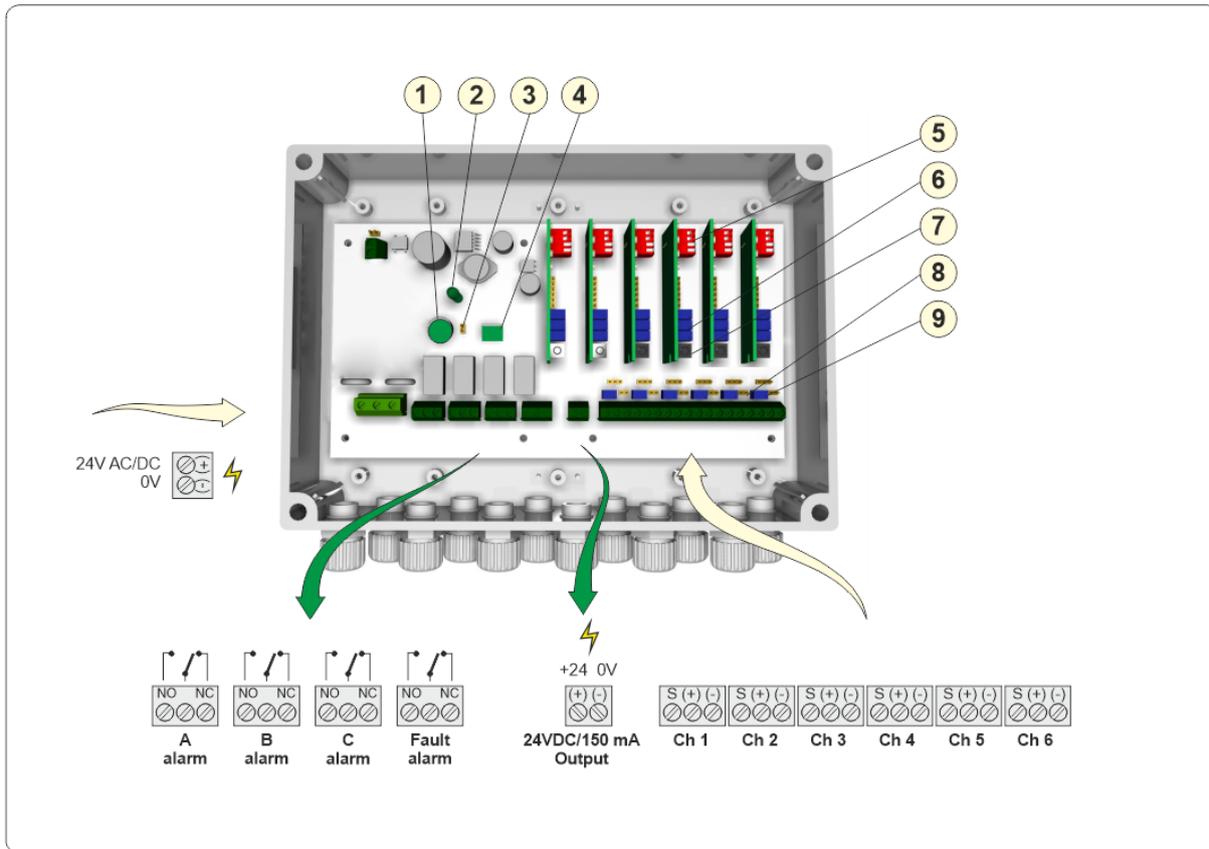
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LDM 250 450 650 Low voltage Multipoint unit ..... 3  
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LDM 250 450 650 Low

LDM 250 450 650 Low

LDM 250 450 650 Low voltage Multipoint unit



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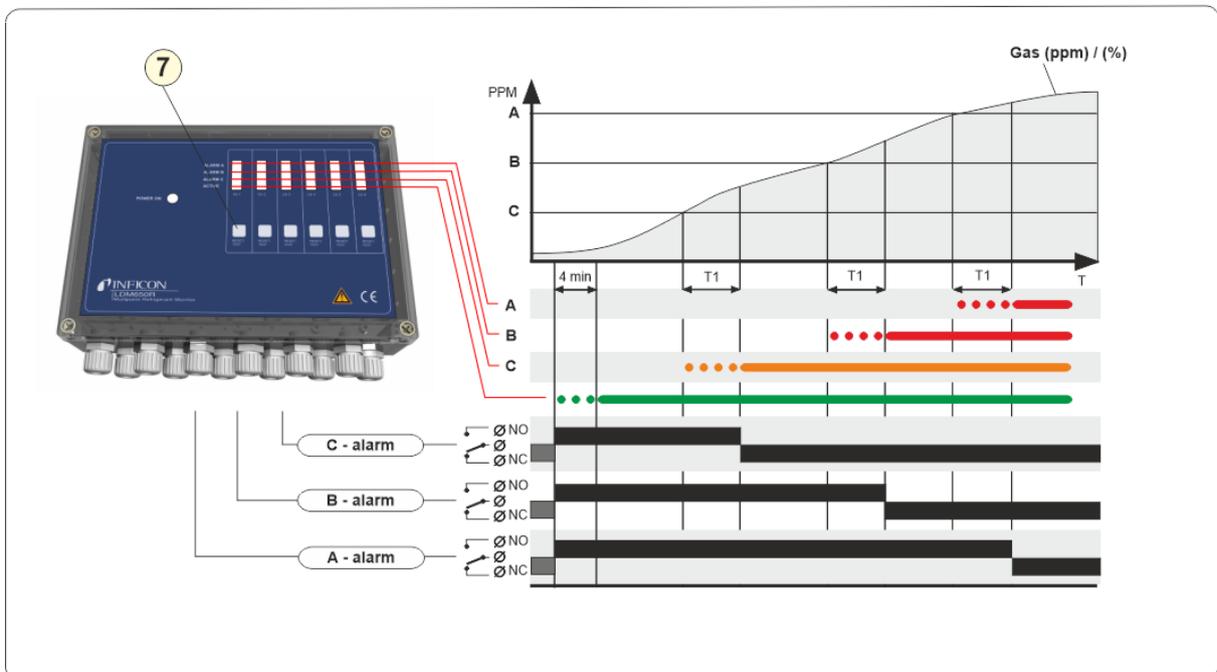
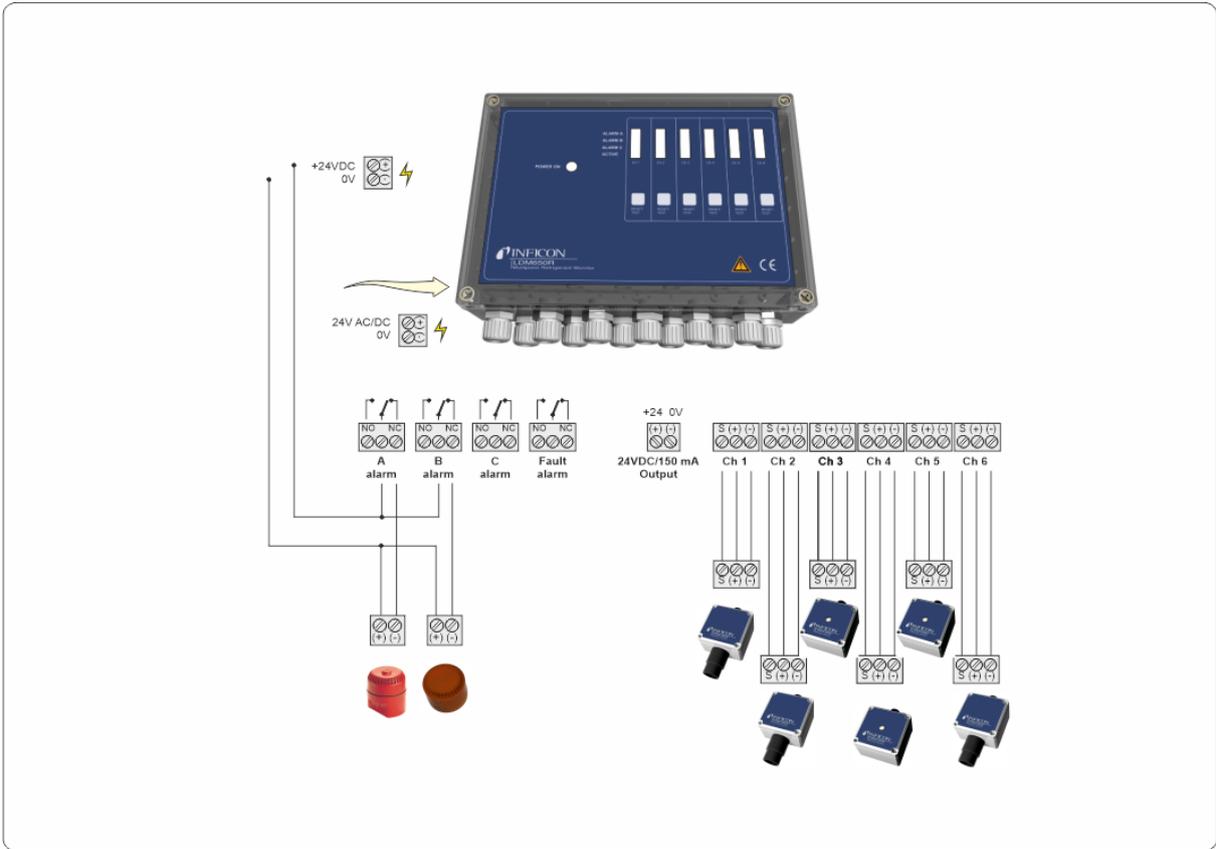


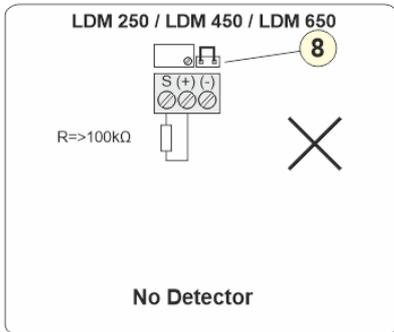
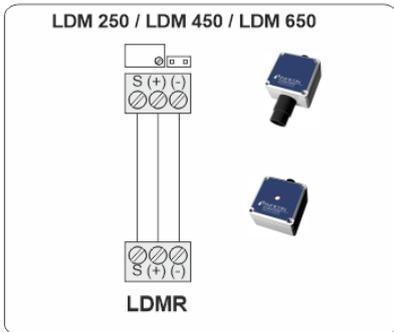
Fig. 1

Wiring diagram

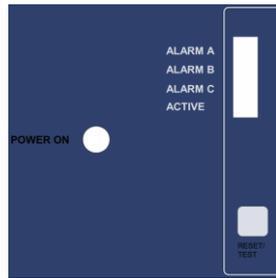


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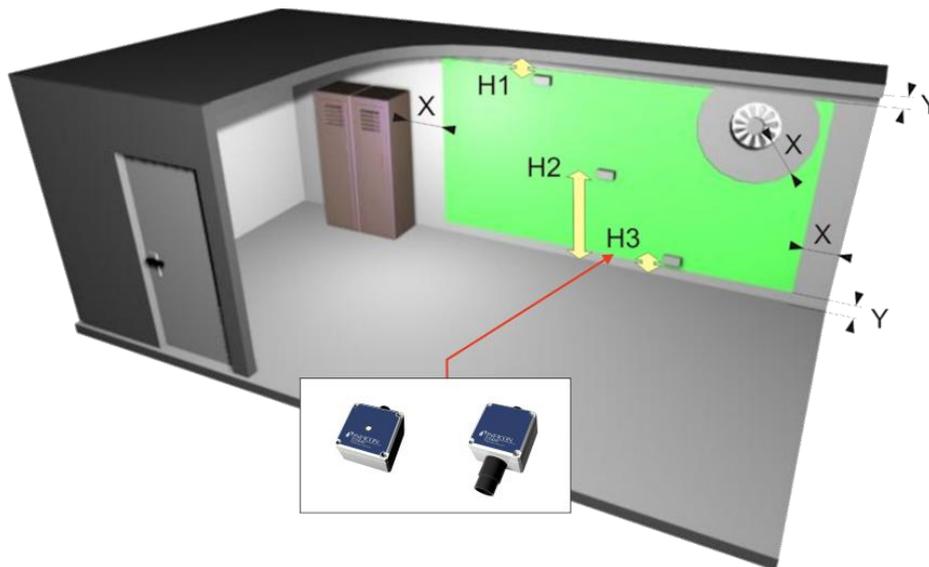
Logical matrix



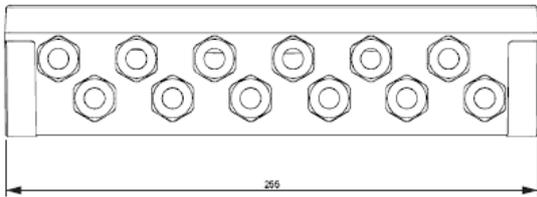
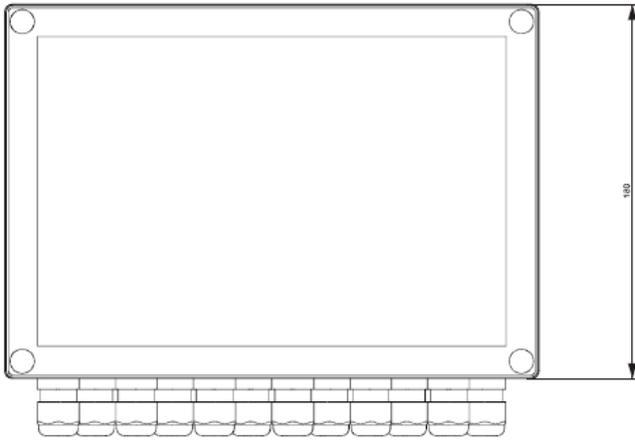
	Power off	Preheat	Normal	Service mode	Alarm C U= $\{<C, <B\}$		Alarm B U= $\{>B, <A\}$		Alarm A U>A		Fault U<0,1V	Fault U<0,1V
T<Xmin, X = delay in minutes. Letter U = signal from sensor (Vdc).					T<Xmin.	T>Xmin.	T<Xmin.	T>Xmin.	T<Xmin.	T>Xmin.	T= $\leq 4$ (h)	T= $\geq 4$ (h)
<b>LEDs (terminal board)</b>												
Power	0	X	X	X	X	X	X	X	X	X	X	X
Buzzer (disabled via jumper)	no indication											
<b>LEDs (per channel)</b>												
Power/active	0	Flash	X	Flash	X	X	X	X	X	X	0	0
Alarm C (low level) (Vdc)	0	0	0	Flash	Flash	X	X	X	X	X	Flash	0
Alarm B (middle level) (Vdc)	0	0	0	Flash	0	0	Flash	X	X	X	Flash	X
Alarm A (high level) (Vdc)	0	0	0	Flash	0	0	0	0	Flash	X	Flash	0
<b>Summary Relay output (Energised/Not energised)</b>												
Alarm C	NE	E	E	E	E	NE	NE	NE	NE	NE	E	E
Alarm B	NE	E	E	E	E	E	E	NE	NE	NE	E	E
Alarm A	NE	E	E	E	E	E	E	E	E	NE	E	E
Fault (Relay D) (no time delay)	NE	E	E	E	E	E	E	E	E	E	NE	NE
Fault (Relay D) (4 hour time delay)	NE	E	E	E	E	E	E	E	E	E	E	NE
											Auto reset	Man reset
<b>Test mode sequeense</b>	5 s	10 s	15 s	20 s	25 s	30 s	35 s	40 s	45 s	50 s	55 s	60 s
	→ → → → → → → → → → → → → →											
LED Power/active	0	Flash	X	Flash	X	X	X	X	X	X	0	0
LED Alarm C (low level)	0	0	0	Flash	Flash	X	X	X	X	X	Flash	0
LED Alarm B (middle level)	0	0	0	Flash	0	0	Flash	X	X	X	Flash	X
LED Alarm A (high level)	0	0	0	Flash	0	0	0	0	Flash	X	Flash	0

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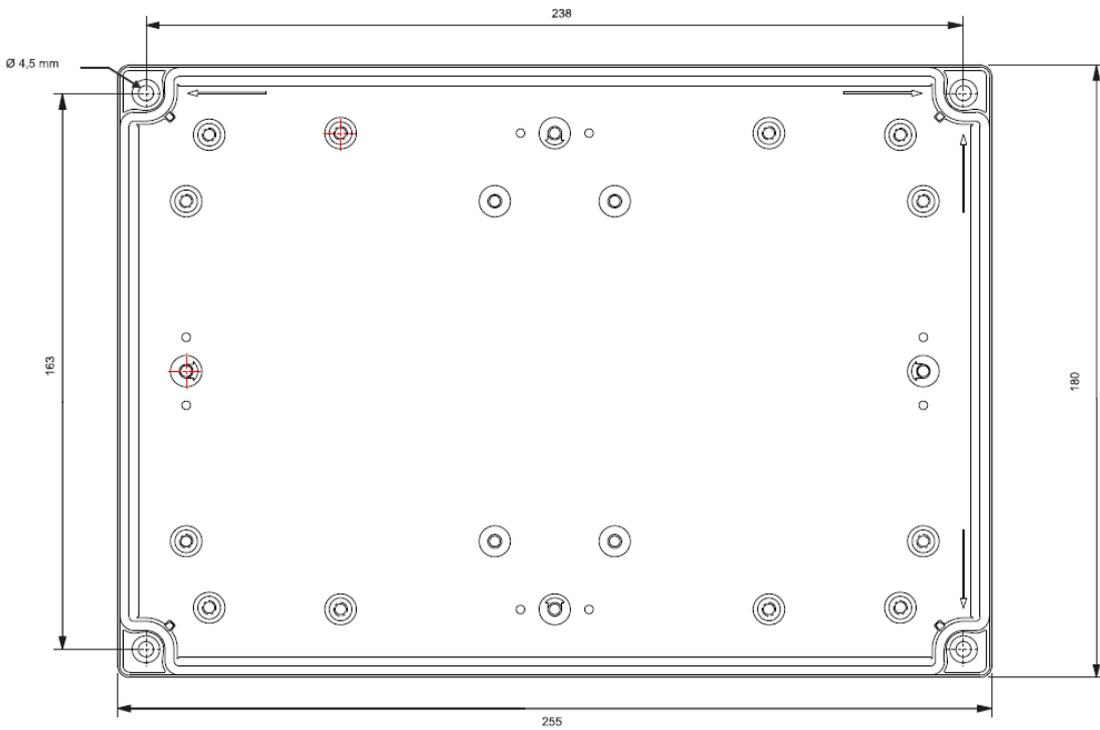


HFC, HFO, HCFC	H3 = 20 cm	X = 50 cm	Y = 20 cm
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LDM 250 450 650 Low

LDM 250 450 650 Low





### EU DECLARATION OF CONFORMITY

This declaration is issued under the sole responsibility of the manufacturer INFICON. The object of the declaration is to certify that this equipment, designed and manufactured by INFICON, is in conformity with the relevant Community harmonization legislation. It has been constructed in accordance with good engineering practice in safety matters in force in the Community and does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was made.

**Equipment Description:** LDM 250 / LDM 450 / LDM 650 and LDMR sensors

**Model Number:** 743-250-G1 / 743-450-G1 / 743-650-G1 / 743-800-G1 (Applicable to all Group numbers)

**Applicable Directives:** EMC Directive 2014/30/EU  
Low Voltage Directive 2014/35/EU  
RoHS Directive 2011/65/EU

#### Applicable Standards:

**EMC Directive 2014/30/EU:**  
Standards applied: EN 61326-1:2012 (Use in the Industrial environments)

**Low Voltage Directive 2014/35/EU:**  
Standards applied: EN 61010-1:2010

**Hazardous Substances Directive 2011/65/EU:**  
Standards applied: EN 63000:2018

**CE Implementation Date:** 2022-05-12

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ANY QUESTIONS RELATIVE TO THIS DECLARATION OR TO THE SAFETY OF INFICON'S PRODUCTS SHOULD BE DIRECTED, IN WRITING, TO THE AUTHORIZED REPRESENTATIVE AT THE ABOVE ADDRESS.



## UK DECLARATION OF CONFORMITY



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Electrical Equipment (Safety) Regulations 2016  
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

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Standards applied: BS EN 63000:2018

**UKCA Implementation Date:** 2022-05-12

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English

## LDM 250/450/650 Low voltage Operating Manual

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**2. Features**

The LDM250, LDM450 and LDM650 are central units with two/four/six channels(sensors). The LDM250/450/650 is a multi-channel microprocessor-based gas monitoring system. Each, up to a maximum of six channels, can be individually configured to monitor different gases with up to three alarm concentrations all with status LEDs.

Other features include:

- User configurable alarm time delays
- Manual/auto alarm reset for each channel
- Built-in service function and self-test program
- Four alarm relays with 230 volts rated SPDT contacts
- Failsafe relay operation on power loss
- Audible alarm
- Low voltage output for auxiliary alarm indication.

**Please Note!**

The LDM250, LDM450 and LDM650 are normally supplied with default set alarm thresholds. These must be verified or reset during commissioning. Alarm levels must always be set on each channel for proper gas and detector type.

Default settings from factory:

Alarm level	Offset
Alarm C	1,0V
Alarm B	2,0V
Alarm A	3,0V



Alarm levels, factory settings are:

HFC, HFO, HCFC (ppm)	C=100	B=1000	A=2000
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Table 3

### 3. Models (sensors included)

Model	Used for
724-250-G1	two channels(sensors)
724-450-G1	four channels(sensors)
724-650-G1	six channels(sensors)

### 4. Function

After connecting each detector and applying power, the green LED on each channel will flash as the pre-heat process commences. After approximately 4 minutes the green LED will illuminate permanently, and the sensor is fully operational. Each channel has one yellow and two red warning LEDs. The yellow LED indicates a low-level gas leak (above alarm threshold C) whilst the two red LEDs indicate gas concentrations above thresholds B and A.

When gas is detected above the respective alarm threshold the appropriate LEDs will flash until the appropriate time delay has expired when it is permanently illuminated, and the corresponding relay contacts change state. As the gas concentration subsides the LEDs and relays will return to their normal state unless the 'manual reset' function has been selected. The audible alarm will initiate if it is configured with the respective alarm threshold and cannot be muted. Technicians can inhibit the alarm by selecting 'Service Mode'.

#### 4.1 AUTO/MANUAL ALARM RESET

DIP switch (5) no3 on each channel's control card manages the alarm reset function. "ON" enables Auto reset and "OFF" enables Manual reset, via pressing "Reset/Test/Service"-button (7).

#### 4.2 ALARM TIME DELAY (T1)

DIP-switch (5) controls the alarm time delay for each channel.

no1	no2	
on	on	No alarm delay
off	on	1 minute delay
on	off	10 minutes delay
off	off	30 minutes delay

#### 4.3 RESET/TEST/SERVICE-BUTTON (7)

Reset/Test/Service-functions is accessible via a pushbutton on the cover.

Pressing the "Reset/Test/Service"-button (7) on any channel for 5 seconds initiates the test program. This sequentially energizes each LED and relay at five second intervals. All LEDs on the chosen channel will go out when the test program has started.

### 4.3.1 SERVICE MODE

Pressing the "Reset/Test/Service" button (7) for 10 seconds will inhibit all alarm functions for the chosen channel for 60 minutes. Service mode is indicated by all LEDs on the chosen channel is flashing. A new 60 minute inhibit period can be initiated by repeating the process. Normal operation will be automatically resumed after 60 minutes or can be cancelled by pressing the "Reset/Test/Service"-button briefly.

### 4.3.2 FAULT MODE

In the event of a detector failure (GV offset < 0,1V) or disconnection of the interconnecting wiring a fault condition will be indicated by loss of the green 'Active' LED, the other LEDs start to flash and the alarm relay D is de-energised. In the event of power failure all relays (A, B, C & D) will be de-energised. Connections are available for an optional battery back-up to enable total continuity of operation in the event of a power failure. A 4-hour delay can be configured for relay D to prevent nuisance alarms. This is activated by setting DIP switch (5) no4 on the respective channel card to 'ON'. The operation of the LEDs will remain unchanged.

### 4.4 INTERNAL BUZZER AND 24VDC AUXILIARY OUTPUT

The internal buzzer (1) and 24VDC output can be activated by the DIP-switch (4) on the terminal board and can be user configured to operate from alarm concentration A(no1), B(no2) or C(no3). Setting the DIP-switch to ON for the respective alarm level selects the appropriate alarm level. The 24VDC auxiliary alarm output is always activated together with the buzzer. However, by removing jumper Bb (3) the buzzer can be disabled.

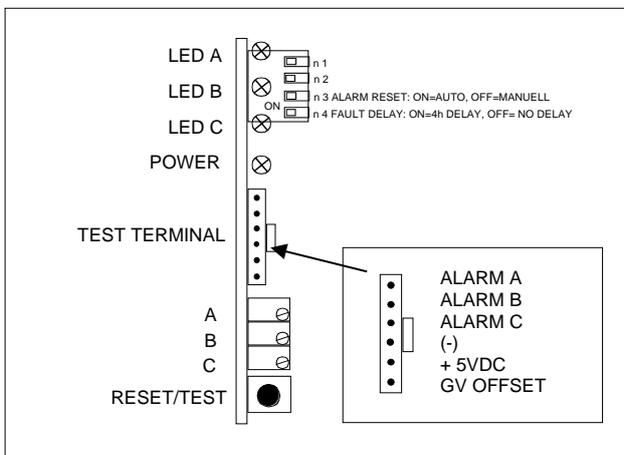
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#### Please Note!



After being powered off for prolonged periods the sensor may take several minutes to stabilize during which time 'false' alarms may be initiated. Such 'false' alarm shall disappear within a few minutes.



## 4.5 Remote sensors

LDMR series is a range of remote sensors designed for use with the LDM units.

Low voltage LDM250, LDM450, or LDM650 units include either 2, 4, or 6 LDMR remote sensors for detecting HFCs, HCFCs, and mixtures and carbon dioxide (CO<sub>2</sub>).

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### Please Note!



The sensors used in the LDMR series have limited selectivity and are therefore not gas specific. Care should be taken when installing the equipment to minimize any cross contamination from other gases or vapours.

For further guidance on specific applications contact us.

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## 5 Location/Installation

Correct location of the LDMR is essential to ensure optimum operation of the system. Special consideration must be given to air movement and whether the gas to be detected is heavier or lighter than air. For gases heavier than air (e.g. Refrigerants (HFC, HCFC) or CO<sub>2</sub>) the sensor should ideally be located approximately 20cm above floor level. Connect the sensor according to the wiring diagram.

NOTE! For unused channels a jumper (8) must be mounted and a >100 kohms resistor (attached) must be installed between (+) and (S) to prevent open sensor alarms.

Otherwise, the channel will indicate a fault alarm.

When changing or replacing a LDMR a new calibration must be performed.

### 5.1 ALARM LEVELS / CHANGING ALARM LEVELS

The unit is normally supplied with default set alarm thresholds.

These must be verified or reset during commissioning.

To set or change the alarm thresholds you need a MCT150 Calibration tool and a small screwdriver.

Full details regarding custom alarm set-points for a range of gases together with a detailed procedure are outlined in specific data sheets. Multiple gases and alarm set-points can be accommodated on a single LDM as each channel is totally independent.

### 5.2 Function Control

Testing the system is recommended to be done once a year. A basic function test can be performed using MCT150. Extended control and calibration require test gas with a specific concentration.

## 6 Technical Data

Standard Housing:	ABS/PC plastic, (IP67)
Power supply:	24 AC/ 24V DC, max 10VA
Status Indication:	Common Power LED
	Individual LED channel indication of
	sensor active and 3 alarm levels.
Inputs:	2, 4 or 6 channels 0-5VDC
Alarm levels:	3 levels/channel, individually set within 0,5...4,8V
Hysteresis:	alarm levels +- ~100mV
Output relays (4 off):	Volt free contacts, SPDT rated 230V AC / 5amps.
Output (voltage):	24VDC max 150mA
Ambient temp:	+0 Deg C - + 50 Deg C
Sensor cable:	3 x 0,75mm <sup>2</sup> max 50m
(Screened)	3 x 1,5mm <sup>2</sup> max 150m
Dimensions:	180 x 255 x 60mm
Glands:	12 x M16

Specifications subject to change



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