

Linear Heat Detector Interface & Fire Zone Monitor

The unit is operated in conjunction with a length of Analogue Resettable Linear Heat Detection Cable (LHDC) and an 'End Of Line' (EOL) terminator, supplied by Patol. The LHDC is a coaxial cable which may be installed in considerable lengths whilst maintaining the ability for the monitoring unit to provide early warning of 'hot spots' and fire conditions on short sections of the overall zone length. Reference should be made to the (separate) data sheet D1167 on the Linear Heat Detection Cable for specification of it's performance and ambient withstand.

Operational Specification

Voltage: 13-30 Vdc (2 wire Mode)
 20-30 Vdc (Relay Mode)
 > 5.5 Vdc - Latched Fire
 < 4.0 Vdc - Reset

Current-Normal < 250 μ A (2 wire mode) *
 < 10 mA (with fault relay)

* Plus zonal circuit monitoring EOL resistor current.

Current-Fire 1.2 mA (2 wire mode) **
 < 10 mA (with fire relay) **
 < 20 mA (with both relays)

** Plus zonal circuit Alarm resistor current.

Current-Fault < 300 μ A

Relay Contacts 1 A @ 24 Vdc / 120 Vac

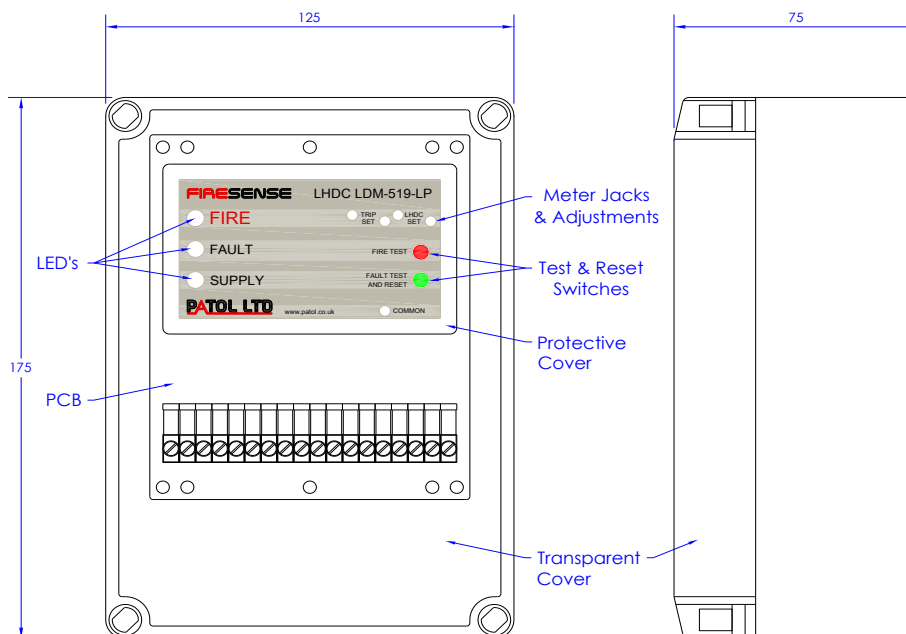
Connections

See Note 4

Outputs		Fire Load/Remote		Supply 0V		Fault Loop		Supply 24V		Fire Contact			Fault Contact			LHDC	
FIRE	FAULT	-	+	-	-	-	+	+	+	COM	N/C	N/O	COM	N/C	N/O	SCREEN	CORE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Enclosure

Rating: IP 66
 Lid: Clear Transparent
 Material: Polycarbonate
 Base: Grey RAL 7035
 Material: Polycarbonate



Notes:

- When directly connected to a 'Zonal Circuit' the Supply +ve (24V) terminals are used. In this mode the required 'Zonal Circuit' supply should be greater than 13V. See application data and specification above.
- Cased units with integrated analogue addressable LOOP INTERFACE circuits have separate terminals for LOOP connection.
- Ensure screen of the LHDC connects to terminal 17 and the core of the LHDC connects to terminal 18.
- Fault contact under 'normal' condition is energised eg. 14 (COM) and 16 (N/O) are closed.

Installation and Unit Configuration

1 Introduction to Operating Modes

The unit has two principle modes of operation:-

1.1 Direct Powered

In this mode the unit derives its supply directly from a 24Vdc power circuit.

The unit's relays are enabled, and signalling of Fire & Fault conditions is by means of volt free contacts.

The unit has additional 24V switched Fire & Fault outputs which may only be used when the module's relays are enabled.

1.2 Line Powered (Low Power)

In this mode the unit obtains its supply solely from a two wire Zonal Circuit or Addressable Loop Interface Module, and signals to the associated Fire Panel (via this circuit) in a similar manner to a conventional smoke or heat detector.

When operated in this mode the unit's relays are disabled.

2 Configuration Selector Links

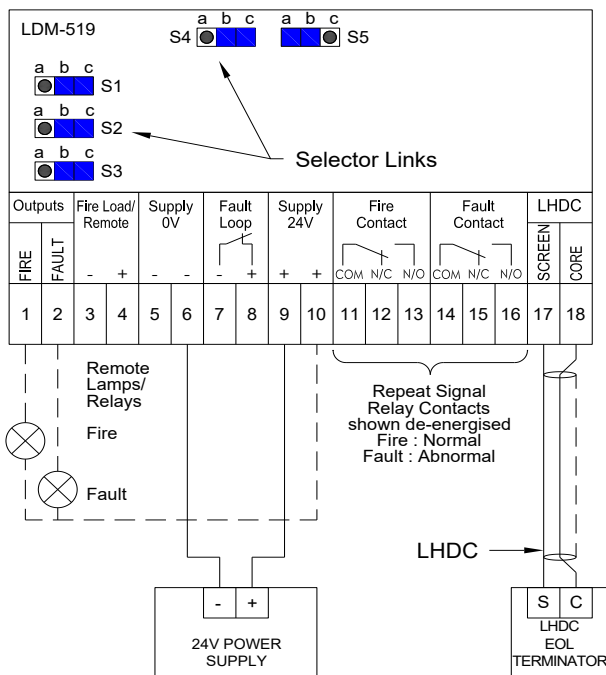
The unit is fitted with five selector links (S1 to S5), the positioning of which determine the operational parameters of the unit. The links are accessible from the front of the module, and detailed on the label.

		a	b	c		a	b	c	
FIRE RELAY	OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON
FAULT LOOP	EXT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	+VE
FAULT RELAY	OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON
SUPPLY FAULT	OFF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON
RESET	MAN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	S5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AUTO

3 Direct Powered Operation - typical configuration

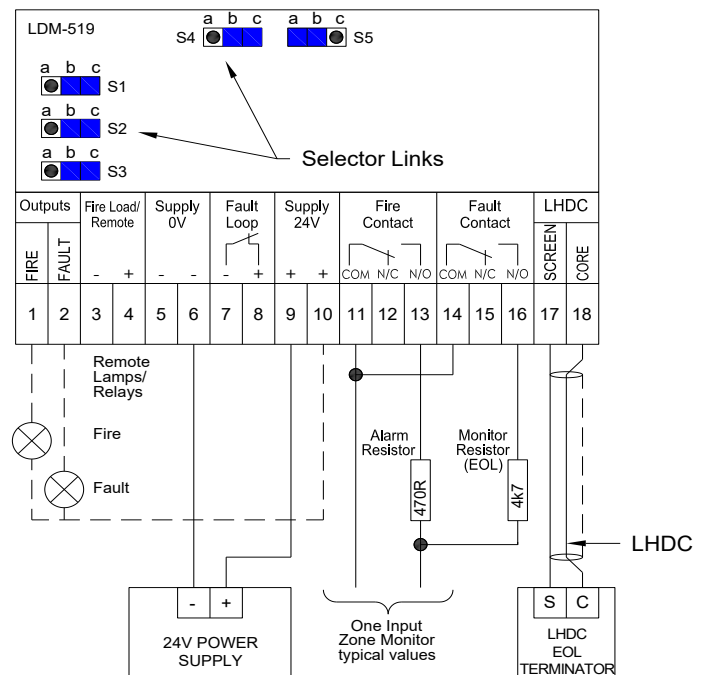
The relays are enabled by the correct positioning of selectors S1 and S3. S2 must be set as shown for correct fault relay signalling. The Fire relay is normally de-energised. The Fault relay is normally energised

Remote 24Vdc lamps, LED's or Relay coils may be operated by connections at terminals 1 & 2 as shown.



Where a 24Vdc supply is employed.

The repeat contacts may be employed to signal an alarm panel and/or initiate control systems.



A typical connection to a conventional panel or One Input Zone Monitor similar to:

Hochiki CHQ-SZM, CHQ-SIM, CHQ-POM;

Apollo 55000-812, 55000845, 55000-833

Other zone monitor manufacturers may work

Installation and Unit Configuration cont.

4 Line Powered Operation - Single Configuration

In normal conditions the Zonal Circuit Monitor Resistor (EOL) at terminals 6 & 7 is presented across the zonal circuit.

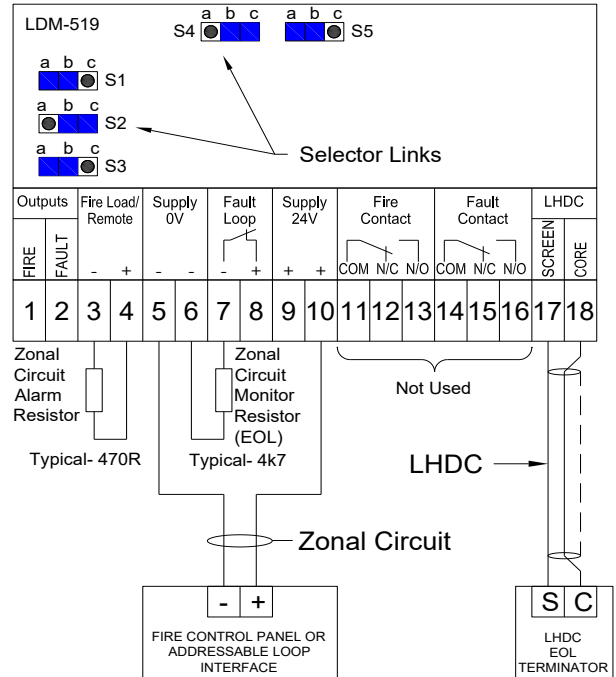
If an LHDC fault is detected the Zonal Circuit Monitor Resistor (EOL) is switched out, and the current drawn from the zonal circuit drops to less than 250µA.

A fault is also signalled if the Zonal Circuit voltage is too low for correct operation of the unit. (Enabled by S4)

If a Fire condition is detected the Zonal Circuit Alarm Resistor at terminals 3 & 4 is presented to the Zonal Circuit.

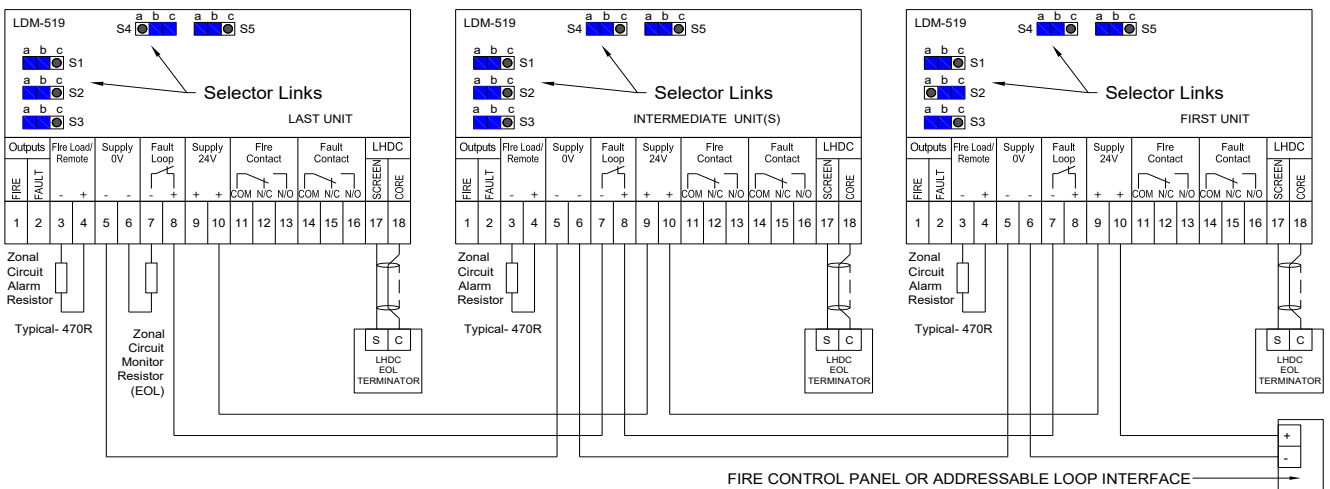
Actual Zonal Circuit Alarm and Zonal Circuit Monitor (EOL) resistor values must be selected as appropriate to the Fire Panel or Addressable Loop Interface.

The repeat signal relays are disabled in Line Powered mode, by means of selectors S1 and S3, and the contacts at terminals 11 to 16 are not employed.



5 Line Powered Operation - Multiple Configuration

Two or more LDM-519 units may be configured to operate from a single Zonal Circuit whilst maintaining fault monitoring and signalling. It is necessary to set the links for the first, last and intermediate unit(s). Shown below.



Commissioning

- 1 Isolate any of the commissioning zones
- 2 Zero Level Adjustment
 - 2.1 Disconnect LHDC
 - 2.2 Connect the LHDC EOL terminator device directly to the LHDC Monitor/Controller so that the LHDC is out of circuit.
 - 2.3 Connect the voltmeter probes between the "COMMON" or "COM" terminal and the "LHDC SET" terminal. This may alternatively be labelled "LHDC" or "ANALOGUE".
 - 2.4 Adjust the "LHDC SET" (or "LHDC" or "ANALOGUE") potentiometer until the voltmeter reads 0v +/- 50mV
 - 2.5 Operate the "Fire Test" pushbutton and note whether the voltmeter indicates a positive or negative voltage swing. Operate the "Reset" pushbutton to return to the normal condition
- 3 Setting Single Alarm/Trip Level
 - 3.1 All Alarm/Trip level adjustments must be set to the same polarity as indicated by the "Fire Test" operation in step 2.5
 - 3.2 Connect the voltmeter between the "COMMON" or "COM" terminal and the "TRIP SET" terminal. This may alternatively be labelled "A1" or "A1 TRIP SET".
 - 3.3 Adjust the "TRIP SET" ("A1" or "A1 TRIP SET") potentiometer to the required trip level determined from the Analogue LHDC Data Sheet D1167. Typically 1, 2 or 3 Volts (1V being most sensitive).
- 4 System Start-up
 - 4.1 Re-connect the LHDC to the circuit, making sure the screen of LHDC is connected to terminal 17 and the core of LHDC is connected to terminal 18.
 - 4.2 After switch on, repeat steps 2.3 and 2.4 allow the system to settle for a period of between 30 mins and 2 hours.
 - 4.3 Ensure the LHDC Monitor/Controller is in a normal state with no faults or alarms indicated.
 - 4.4 Measure the voltage between the "COMMON" (or "COM") terminal and the "LHDC SET" (or "LHDC" or "ANALOGUE") terminal. The voltage indicated should be appropriate for the zone length and actual ambient temperature according to the graph in the Analogue LHDC Data Sheet D1167. Typically 0V +/-100mV at 25°C
 - 4.5 Ensure the LHDC Monitor/Controller correctly indicates a Fire Alarm when the "Fire Test" push-button is operated and that it returns to the normal condition once reset.
 - 4.6 All alarm and extinguishing functions may now be enabled.
- 5 Auto Reset.

The unit may be configured for non latching operation by setting S5 to position b to c.
This is not normally recommended when the unit is in line (Zonal Circuit) powered.

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