

Model DLI1 Loop Powered Indicator



- Loop powered
- Less than 1V required from loop
- ATEX approved for use in IS loops
- IP68 enclosure available
- Field programmable
- Wide range of Zero offsets
- RFI protected
- 12.5mm high display
- Operating temperature -10 to +70°C
- Low cost

General Description

Model DLI1 is a loop powered digital indicator, which can be connected in series with any 4-20mA current loop and will display the current flowing in meaningful engineering units.

The large 3 ½ digit display is easy to read and the whole device introduces a volt drop of less than 1V at full scale, which means it can be used where several other devices are already in the loop.

The Zero and span are independently adjustable so the indicator can be calibrated to display any range within the +/-1999 range, large positive and negative zero offsets are easily accommodated.

Housings

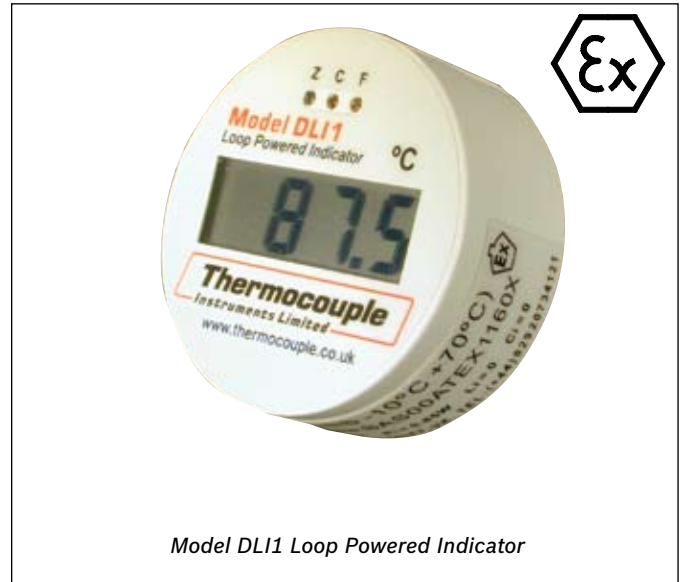
The indicator can be supplied in an EEx de approved, IP68 enclosure in a variety of materials to suit the needs of the environment in which it is installed. Extended versions allow a transmitter and indicator to be conveniently mounted as a single unit.

Specification

Input	4-20 mA 2 wire
Display	3.5 digit LCD. Height 12.5 mm
Volt Drop	Less than 1V at 20mA
Overrange	±200mA without damage
Rangeability	Zero can be set between -1300 & +1999 Span is fully adjustable ±1999 Method, by DIP switches and multi-turn potentiometers
Decimal Point	Selectable by DIP switch
Accuracy	±1 digit
Ambient Temp	-10 to +70°C

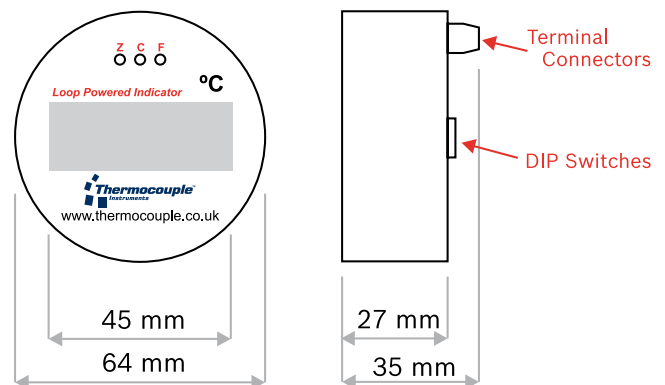
Intrinsic Safety

DLI 1 is available ATEX approved II 1G EExia IIC T5.
Certificate numbers:
BAS 00 ATEX 1161X (component applications)
BAS 00 ATEX 1160X (when fitted in H70 connection head)

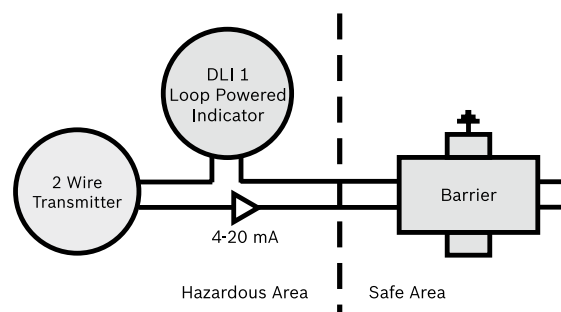


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Dimensions



Connection Diagram



Installation / Safety

Non-Enclosed Unit

Certificate No: BAS00ATEX1161X

To comply with the requirements of Intrinsic Safety, the “Component Certified” version of model DLI 1 MUST be housed in an enclosure providing a minimum degree of protection of IP20. When an end user wishes to house the unit in any enclosure other than the H70 below, the new assembly MUST be submitted to the “Health & Safety Executive” for re-certification.

The current loop MUST be protected by a Certified “Zener Barrier” or “Isolating IS Interface Unit”, with the following maximum output parameters:

$$I_o = 200\text{mA}, P_o = 0.85\text{W}, U_o = 28\text{V}.$$

Non-metallic enclosures must have a surface resistance of less than 1G Ohm, light alloy or zirconium enclosures must be protected from impact or friction when installed.

The housing chosen must be made from materials capable of resisting any anticipated extremes of temperature, and shall not be corroded or prematurely aged by the atmospheric conditions it could reasonably be expected to encounter in service.

The complete electrical circuit in the hazardous area MUST be capable of withstanding an AC test voltage of 500V RMS to earth or frame of the apparatus.

The capacitance and either the inductance, or the inductance to resistance (L/R) ratio of the cables in the hazardous area MUST NOT exceed the parameters specified in the schedule of the chosen safety barrier certificate, and/or system certificate.

Installation MUST comply with the requirements specified in BSEN 60079-14:2003.

Where there is a possibility of attack by aggressive substances it must be protected by a suitable enclosure, capable of protecting it from the environment and the effects of impact, thermal or mechanical stress. DLI 1 units must not be fitted in locations where the ambient temperature could be expected to exceed 70°C (50°C for enclosed unit).

This equipment is designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC.

Enclosed Unit

Certificate No: BAS00 ATEX 1160X

The “Enclosed” version is fitted inside the model “H70” explosion proof enclosure, which is specifically designed for this purpose. Providing protection to IP68, the housing is available in Stainless Steel, Cast Iron or Aluminium. The enclosure is fitted with a window to allow viewing of the display. The explosion proof enclosure DOES NOT mean that it can be used without a suitable IS barrier, except where the entire installation is certified EExde.

The enclosure can also contain any of the “ATEX” certified transmitters listed in BASEEFA approved document.

“O Ring” seals must be carefully examined after opening to ensure that the IP68 protection is maintained. Damaged seals MUST be replaced.



H70 Connection Head

Operation

The indicator is designed to connect in series with a 4-20mA current loop, drawing its power from the loop, (Voltage drop only 1V), and converting the current flowing into meaningful engineering units.

Connection is by a pair of terminals mounted on the rear of the device, the 4-20mA loop should be broken and the indicator connected in series, taking care to observe correct polarity. The indicator is protected against reversed connections, but no reading will be displayed if incorrect. Connecting directly across a 24V supply without a transmitter or similar device to regulate the loop current will result in a blown fuse, or damage to either the power supply or the safety barrier.

Model DLI 1 can easily be ranged to display virtually any engineering units by a combination of the “Zero Offset” DIP switches mounted on the rear PCB, and a pair of coarse and fine “Span Adjustment” potentiometers accessible from the front, above the display.

The decimal point can be activated by means of another DIP switch on the rear PCB.

Range Setting Instructions

Zero Offset

The vast majority of ranges will begin at Zero, the standard indicator is supplied with switches 3 & 7 closed, the setting for Zero offset.

Once Zero has been set, using the "Z" potentiometer, it will NOT change regardless of the full scale selected.

This default switch combination also allows offsets of approximately 500 to +250 counts (-50.0 or 500 to +25.0 or +250)

For larger positive or negative offsets choose a suitable switch combination from the table below.

Offset	1	2	3	4	5	6	7	8
+1000 to +2000	On				On			
+250 to +1000		On				On		
-500 to +250			On				On	
-1300 to -500				On				On

Span Adjustment

Span is set by adjusting a combination of 2 potentiometers, first adjust the "C" pot until close to the required full scale reading, then fine tune with the "F", fine adjustment pot.

Offset Ranges

The method for setting offset ranges is as follows, FIRST set the span required, e.g., for a range of +100 to +500 set a range of 0-400, THEN offset the bottom end by +100, no further adjustment will be required.

Decimal Point

If required, the decimal point can be activated by switching either of the DIP switches labelled "DP" at the bottom of the rear circuit board.

Maintenance

Model DLI 1 is maintenance free; the electronics are fully encapsulated and cannot be disassembled.

Cleaning should ONLY be restricted to wiping with a damp cloth, or approved anti-static cleaner to avoid the danger of ignition due to electrostatic charges.

Transmitter Labelling

When the enclosure also contains an Intrinsically safe temperature transmitter, a label must be fitted to the outside detailing the model and certification numbers of the transmitter.

A list of permissible transmitters and their certification details contained in BASEEFA approved document.



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