

## Temperature Indicator / Controller (Digital Linearized)

(Product code 2.1 to 2.7)



### Model wise descriptions:

Sr.No.	Model	Product Description	Size (mm.)
2.1	DLI-12	Temperature Indicator 0.5" Display	96 x 96 x 160
2.2	DLI-1000	Temperature Indicator 1" Display	192 x 96 x 160
2.3	DLI-2000	Temperature Indicator 2" Display	192 x 96 x 160
2.4	DLI-4000	Temperature Indicator 4" Display (wall mounting)	500 x 250 x 150
2.5	MLI-X	Multi-point Temperature Indicator (X=2,4,6,8,10) (Using rotary selector switch)	96 x 96 x 160
	2.5.1	MLI-2	2 point indicator
	2.5.2	MLI-4	4 point indicator
	2.5.3	MLI-6	6 point indicator
	2.5.4	MLI-8	8 point indicator
2.6	DLC-301	Single Set Point Temp. Controller (4 digit T/W setting)	96 x 96 x 160
2.7	DSL-12	Two Set Point Controller ( 4 digit T/W setting for each set point)	96 x 96 x 160

## Description:

Thermocouple sensors generating emf/mV and RTD sensors generating the change in resistance value with respect to the change in temperature does not have non linear characteristic, hence to indicate the temperature within the accuracy of 0.1 °C or 1 °C throughout the measurable range, the need arises to linearize these non linear curves.

Libratherm offers various models of Linearized Temperature Indicator / Controller for accurate indication of temperature within the accuracy of  $\pm 1^{\circ}\text{C}$  or  $\pm 0.1^{\circ}\text{C}$  in spite of non-linear behavior of the thermocouple and RTD (Pt-100) sensors. The Linearized indication is achieved by software linearization technique using 12 bit ADC and high-density memory, where the data's are stored in. Along with the digital Linearized indications, single or dual set point control is also available. The Control action may be ON/OFF (through Relay/SSR/Triac). One of the application areas of this controller is to use it as the safety controller (or police protection) along with the microprocessor based PID or RAMP/SOAK program controller, where the indicating accuracies of both are matched without any ambiguity.

## Features:

- ❖ Accuracy better than  $\pm 0.1\%$  of the full scale.
- ❖ Elegant looks and Very easy to operate.
- ❖ Digital design and not prone to EMI/RFI.

## Application:

- ◆ Heat treatment
- ◆ High temperature Furnace / Kiln control
- ◆ Star / Delta change over of heating coils
- ◆ Police protection with PID/Program controller
- ◆ Metallurgy and Ceramic R & D centres.

### Technical specifications:

<b>Input</b>	Thermocouple J,K, R,S, B, C, D or RTD (Pt – 100) {Any one to be specified}
<b>Range</b>	Full range of the specified input.
<b>Accuracy</b>	± 1 °C for thermocouple and ± 0.1 °C for RTD input.
<b>Display</b>	4 digit Red 7-segment LED display. (Display size is model dependent)
<b>CJC</b>	Automatic cold junction compensation using built in temperature sensor.
<b>Set point</b>	Adjustable using front panel push type coded wheels (Thumb wheels)
<b>Control action</b>	ON / OFF control. (For heating control and High / Low Alarm)
<b>Control output</b>	Potential free relay change over contacts and SSR driver (0 to 10VDC pulse @ 30mA) or Triac / AC SSR and SSR driver per set Point (DLC-301, DSL-12). Relay contacts and AC SSR are rated for 6A @ 230VAC.
<b>Hysteresis</b>	±1°C for ON/OFF action (for 1°C resolution controller) ±0.1°C for ON/OFF action (for 0.1°C resolution controller)
<b>Output Indication</b>	The front panel LEDs marked OUT Or OUT1 and OUT2
<b>Supply Voltage</b>	230VAC / 110 VAC ± 10% (5VA), 50/60Hz
<b>Size</b>	96 x 96 x 160 mm, 192 x 96 x 160 mm and as per the table given above.
<b>Enclosure</b>	Metallic duly powder coated with ABS bazel and polycarbonate front

### Input and Range Selection Table:

Code	Input	Range
A1	J T/C - Fe/Con thermocouple	0 to 760 °C
A2	K T/C - Cr/Al thermocouple	0 to 1372 °C
A3	R T/C - Pt- Pt/Rh13% thermocouple	0 to 1768 °C
A4	S T/C - Pt- Pt/Rh10% thermocouple	0 to 1768 °C
A5	B T/C - Pt30%Rh/Pt6%Rh thermocouple	0 to 1820 °C
A6	C T/C - W5%Re/W26%Re thermocouple	0 to 2000 °C
A7	D T/C - W3%Re/W25%Re thermocouple	0 to 2000 °C
A8	Pt-100 - RTD sensor (Alpha = 0.00385)	0.0 to 400.0 °C

### Ordering information:

Model	A- Input	B- Output-1 Mode	C- Output-1Type	D- Output-2 Mode	E- Output-2 Type	F- Supply Voltage
DLI-12	Any one of A1 to A8	B1- (High Alarm)	C1- (Relay + DC Pulse)	D1- (High Alarm)	E1- (Relay + DC Pulse)	F1- (230VAC)
DLI-1000						
DLI-2000						
DLI-4000		B2- (Low Alarm)	C2- (Triac + DC Pulse)	D2- (Low Alarm)	E2- (Triac + DC Pulse)	F2- (110VAC)
MLI-2						
MLI-4						
MLI-6		00- (None)	C0- (None)	D0- (None)	E0- (None)	
MLI-8						
DLC-301						
DSL-12						

### Examples:

Model	A- Input	B- Output-1 Mode	C- Output-1Type	D- Output-2 Mode	E- Output-2 Type	F- Supply Voltage
DLI-12	A3	00	00	00	00	F1
DLC-301	A6	B2	C1	00	00	F1
DSL-12	A2	B2	C1	D1	E1	F2

Example	Ordering Code	Description
1	DLI-12-A3-00-00-00-00-F1	This is Temperature Indicator in 96 x 96 mm size accepting R type thermocouple and calibrated in the range of 0 to 1768 °C and working on 230VAC supply.
2	DLC-301-A6-B2-C1-00-00-F1	This is single set point on-off controller accepting C type thermocouple calibrated in the range of 0 to 2000oC with single control relay and dc pulse output and working on 230VAC.
3	DSL-12-A2-B2-C1-D1-E1-F2	This is two set point on-off controller accepting K type thermocouple calibrated in the range of 0 to 1372 °C with dual relay and dc pulse output for Low and High alarm and working on 110VAC

REMARK :

User can select the desired model of Temperature indicator/controller with type of sensor, required calibrated range, control output and supply voltage from the above tables. For any special purpose requirement please write to us on [sales@libratherm.com](mailto:sales@libratherm.com).