

## (C) DIGITAL & MICROPROCESSOR BASED TEMPERATURE SCANNERS



### MODEL WISE DESCRIPTIONS :

4.1	MSI-8/XX	Digital Temperature Scanner (X = 04,06,08 points)
4.2	MSI-16/XX	Digital Temperature Scanner 0.5" Display (XX= 04,08,12,16 points)
4.3	MSI-17/XX	Digital Temperature Scanner 1" Display (XX= 12,16 points)
4.4	MSI-80XX	Microprocessor based Temperature / Process Scanner (4,8,12,16 points) XX = 04,08,12,16
4.5	MSI-80XX/C	Microprocessor based Temperature / Process Scanner (XX= 04,08,12,16) with common high / low alarm
4.6	MSI- 80XX/A	Microprocessor based Temperature / Process Scanner (XX= 04,08,12,16 points) with common high / low alarm and per channel high / low alarm LED indication and transistor drivers for external relays

#### DESCRIPTION :

(4.1 to 4.3) :

Libratherm offers Digital Temperature Scanners Model LSI-8, Model LSI-16 and Model LSI-17, which are suitable for continuous monitoring of temperature or process values at different locations, hence eliminates the need for number of individual temperature or process indicators and hence saves on cost and panel space.

The temperature is indicated within the accuracy of +/-

0.5% having 0.5" or 1" 7-segment display along with the respective channel number at the adjustable scan interval of 2-20 seconds. The standard features includes SCAN/HOLD facility to either scan the channel or hold particular channel, and it can be incremented using the Advance front panel membrane switch.

Other than input from temperature sensors these Models can also accept (4-20) mA or (0-5) Volt signals to monitor other process variables like pressure, flow, pH, ORP, AC voltage, AC current, etc.

(4.4 to 4.6) :

Libratherm also offers Microprocessor based Temperature / Process Scanner Model MSI-80XX series, which is also suitable for continuous monitoring of temperature or process at different locations with higher accuracy and additional useful features of common and individual high or low alarms. Being

microprocessor based it is more user friendly to operate.

The Model accepts thermocouples or RTD (Pt-100) sensors, as inputs. The temperature is indicated within the accuracy of  $\pm 1^\circ\text{C}$  or  $\pm 0.1^\circ\text{C}$  of the specified input range, in spite of non-linear behavior of the standard thermocouple and RTD (Pt-100) sensors. The Model

accepts thermocouples or RTD (Pt-100) sensors, as inputs. The temperature is indicated within the accuracy of  $\pm 1^{\circ}\text{C}$  or  $\pm 0.1^{\circ}\text{C}$  of the specified input range, in spite of non-linear behavior of the standard thermocouple and RTD (Pt-100) sensors. The Linearized indication is achieved by software linearization technique. It is available for 4, 8, 12 & 16 channels.

Channel facility and manual increment of the channel number using front panel membrane keyboard.

Other than input from temperature sensors MSI-80X series can also accept (4-20) mA or (0-5) Volt signals to monitor at various locations, other process parameters such as pressure, flow, pH, ORP, level, AC voltage, AC current, etc...

The standard features include SCAN/HOLD, SKIP

### FEATURES :

- Available in standard DIN sizes.
- Digital and Microprocessor based models
- Highly accurate and sturdy in operation.
- Elegant looks and Very easy to operate.
- Accepts standard inputs like thermocouple, RTD - Pt-100 2 or 3-wire input, etc.
- Models with 4, 8, 12 & 16 inputs are available.
- High quality membrane keypad
- Facility of common and individual high/low alarms.

### APPLICATION :

- ▶ Heat treatment, Large funnel Furnace / Oven Temperatures at various locations
- ▶ Transformer oil temperature
- ▶ Power plant
- ▶ Food processing ovens
- ▶ Plastic / Packaging industry
- ▶ Environmental chambers, Cold Storage and Chilling plants
- ▶ Laboratory equipment.etc.

### TECHNICAL SPECIFICATIONS:

<b>IModel: MSI-8, MSI-16 &amp; MSI-17 (4.1 to 4.3)</b>	
<b>No of channels</b>	4, 6, 8, 12 & 16
<b>Input</b>	J, K, R, S, B, C, D, RTD(PT-100), RTD(PT-1000)/2 or 3 wire, mV, mA etc...
<b>Range</b>	-200 to 2000 °C Subject to the specified input
<b>Accuracy</b>	Better than $\pm 0.5\%$ of the specified input range
<b>CJC</b>	Automatic for thermocouple input.
<b>Display</b>	3.5 digit for Process Value and 1 or 2 digit for channel number - 0.5" or 1" 7-segment Red LED to display.
<b>Open Sensor Indication</b>	Display shows (1 ) MSD.
<b>Scan Time</b>	2 to 20 Seconds adjustable using front panel potentiometer
<b>Channel Scan / Hold/Advance</b>	Selectable using front panel membrane switch
<b>Supply</b>	230VAC / 110 VAC $\pm 10\%$ (10VA), 50/60Hz or 24VDC @ 500mA
<b>Size</b>	96 x 96 x 120 mm or 192 x 96 x 160 mm or 288 x 144 x 200 mm
<b>Enclosure</b>	Metallic with ABS bezel and polycarbonate front fascia

**TECHNICAL SPECIFICATIONS:**

<b>Model: MSI-80 Series (4.4 to 4.6)</b>	
<b>No. Of channels</b>	4, 8, 12 or 16
<b>Input</b>	J, K, R, S, B, C, D, RTD(PT-100), RTD(PT-1000)/2 or 3 wire, (4-20)mA, (0-1)V etc. (each channel can be of different input type)
<b>Range</b>	-200 to 2000 °C Subject to the specified input
<b>Accuracy</b>	Better than $\pm 0.1^{\circ}\text{C}$ , $\pm 1^{\circ}\text{C}$ - (Range dependent) Software Linearized
<b>CJC</b>	Automatic built-in from the range (0-50) °C
<b>Resolution</b>	0.1°C, 1 °C (Range dependent)
<b>Display</b>	4 digit each 0.5" 7-segment Red LED to display Process & Alarm values, 2 digit 0.5" 7-segment Red LED for channel no
<b>Open Sensor Indication</b>	Display shows Flt-1 or Flt-2 and Alarm relays will be turned OFF
<b>Scan Rate</b>	1 to 99 sec (programmable through front panel keyboard)
<b>Skip/Hold Facility</b>	Available through key board in configuration mode
<b>Key board</b>	6 x 1 soft key membrane keypad for data entry
<b>High / Low Alarm</b>	Settable using key pad
<b>Common Relay output</b>	2 nos. potential free change over contacts (1 each for high and low output but common for all the channels)
<b>Alarms Output</b>	2 per channel i.e. 32 open collector outputs to drive external relay card. Can be provided as LL, HH, LH, HL alarm & trip Logic
<b>LED Indication</b>	32 LED's in the front indicating status of each alarm output
<b>Size</b>	192 x 96 x 200 mm
<b>Panel Cutout</b>	186 x 92 mm., $\pm 0.5$ mm
<b>Supply</b>	230VAC / 110 VAC $\pm 10\%$ (10VA), 50/60Hz or 24VDC @ 500mA
<b>Enclosure</b>	Metallic with ABS bezel and polycarbonate front

**ORDERING INFORMATION :**

MODEL	INPUT		RANGE IN °C		ALARMS OUTPUTS		SUPPLY	
	A		B		C		D	
LSI-8/XX	J - (A1)		0 TO 760 °C (B1)		NA		230 VAC (E1)	
LSI-16/XX	K - (A2)		0 TO 1372 °C (B2)		NA		110 VAC (E2)	
LSI-17/XX	E - (A3)		0 TO 1000 °C (B3)		NA		OTHERS (E3)	
	T - (A4)		0 TO 400 °C (B4)					
MSI-80XX	S - (A5)		0 TO 1768 °C (B5)		COM.HI/LO RELAY (C1)			
MSI-80XX/C	R - (A6)		0 TO 1820 °C (B6)		OPEN COLLECTOR (C2)			
MSI-80XX/A	B - (A7)		200 TO 1820 °C (B7)		BOTH C1 , C2 (C3)			
XX= 04 ,08 12, 16	PT100 - (A8) OTHERS (A9)		0.0 TO 400.0 °C (B8) SPECIFY (B9)		NONE (C4)			

**EXAMPLE : 1**

MODEL	A		B		C		D	
<b>LSI-8/04</b>	A	2	B	3	X	X	D	1

This is 4 Channel Scanner with K type thermocouple input having range (0-1000)°C, has no alarm relay and Operating on 230VAC supply.

When all the channels are not of same type, please specify each required channel in the following format.

Channel No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Input Type	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

**EXAMPLE : 1**

For 16 channel data logger, 1<sup>st</sup> 8 channels are K type, next 9 to 12 channels are RTD(Pt-100) and next 13 to 16 channel are (4-20)mA. The following code is applicable.

Channel No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Input Type	A1	A1	A1	A1	A1	A1	A1	A1	A8	A8	A8	A8	A9	A9	A9	A9

For A1 K type the range will be 0 to 1372 oC, For A8 Pt-100 the range will be 0.0 to 400.0 oC and for A9- (4-20)mA user will have to specify the required display range.