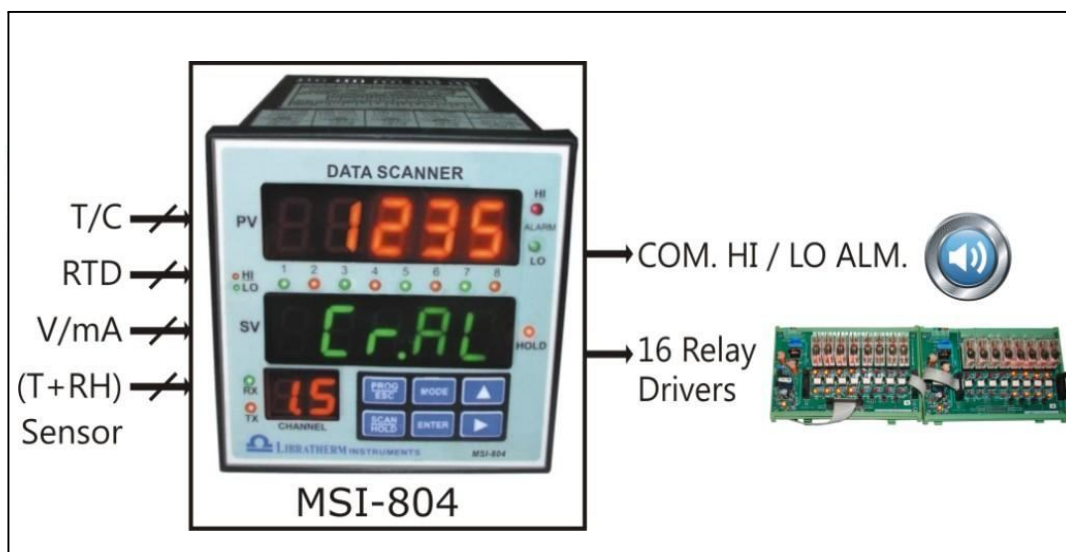


## Microcontroller Based Temperature/Process Scanner

(Product Code 7.4 to 7.6)



### Model Wise Description:

Sr. No	Model	Product Description (X = No. of channel)	Size (WxHxD) (mm.)
7.4	<b>MSI-804-F-X</b>	4 or 8 Channel Temperature/Process Scanner with Fixed input / 2 common relay outputs and 8 or 16 independent relay drivers. <b>(X=4 or 8)</b>	96 X 96 X 160
7.5	<b>MSI-804-U1-X</b>	4 or 8 Channel Temperature/Process Scanner with user selectable Thermocouple and other process input / 2 common relay outputs and 8 or 16 independent relay drivers. <b>(X=4 or 8)</b>	96 X 96 X 160
7.6	<b>MSI-804-U2-X</b>	4 or 8 Channel Temperature/Process Scanner with user selectable Pt-100 and other process input / 2 common relay outputs and 8 or 16 independent relay drivers. <b>(X=4 or 8)</b>	96 X 96 X 160

### Description:

**Libratherm offers Microcontroller based Temperature / Process Scanner Model MSI-804** which is designed for continuous, simultaneous and very accurate monitoring of temperature or process values at maximum 8 different locations.

The Model accepts universal input of standard thermocouples or RTD(Pt-100)/3 wire sensors and voltage or current signals. The type of input for each channel is user selectable from the keyboard, i.e. all 8 channels can be selected for different type of inputs. MSI-804 incorporates 16 bit ADC and offers 5 digit display having the range of 0 to 20000 counts or -10000 to +10000 counts. Such wide display range makes it possible to display the temperature or process value with the highest degree of accuracy and resolution. For example, using R type thermocouple the temperature can be displayed with 0.1oC resolution from 0.0 to 1768.0°C. Similarly, any other process value can be precisely displayed with desired resolution within the specified range.

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Other hardware features includes, 2 nos. of common for all channels high/low built in relay outputs, 16 nos. of relay drivers – available to the user on 20 pin FRC connector and cable. FRC compatible 8 channel relay cards are also available. The respective front panel dual colour LEDs shows the status of each channel – whether it is High (Red) or Low (green) compared to their respective set values.

Standard features include programmable display SCAN time, channel SKIP and HOLD facility with manual increment of the channel number using front panel membrane keyboard.

### Technical specifications:

<b>No. Of channels</b>	4 or 8
<b>Universal Input</b>	J, K, R, S, B, RTD(Pt-100)/2 or 3 wire, (4-20)mA, (0-1)V, (0-5)V etc. (user configurable or factory fixed - as specified)
<b>Input Selection</b>	Factory set for each channel or User selectable for each channel (Model dependent)
<b>Range</b>	0 to 20000 or -10000 to +10000 UOM – Subject to the specified input (Refer the Input and range selection table given below)
<b>Accuracy</b>	Better than $\pm 0.1$ °C , $\pm 1$ °C (Software linearized for temperature)
<b>Display</b>	5 digit each 0.5" 7-segment Red /Green LED to indicate Process, Alarm values and Real Time Clock and 2 digit 0.3" 7-segment Red LED for channel no.
<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>High / Low Alarm</b>	Common or individual 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 Outputs</b>	8 x 2 open collector outputs to drive external relay cards.
<b>LED Indication</b>	8 dual colour LED's in the front indicating status of each alarm output.
<b>Supply</b>	90V - 260VAC / 110 VAC $\pm 10\%$ (10VA), 50/60Hz or 24VDC @ 200mA
<b>Enclosure</b>	Plastic or Metallic with ABS bezel and polycarbonate front.
<b>Size</b>	96 x 96 x 160 mm .
<b>No. of Back Panel Terminals</b>	Total 37 terminals.

## Input and Range Selection Table:

Code	Input	Range
A1	Factory set to 8 universal inputs marked (*) below : A3,A4,A5,A6,A7,A16,A17 & A18 <b>(U1)</b>	
A2	Factory set to 4 user selectable inputs marked (^) below : A14,A16,A17 & A18 <b>(U2)</b>	
A3	J type : Fe/Con thermocouple (*)	0 to 760 °C
A4	K type : Cr/Al thermocouple (*)	0 to 1372 °C
A5	R type : Pt/PtRh13% thermocouple (*)	0 to 1768 °C
A6	S type : Pt/PtRh10% - thermocouple (*)	0 to 1768 °C
A7	B type : Pt30%Rh/Pt6%Rh thermocouple (*)	200 to 1820 °C
A8	T type : Cu/Con thermocouple	0 to 350 °C
A9	E type : NiCr/CuNi thermocouple	0 to 900 °C
A10	C type : W5%Re/W26%Re thermocouple	0 to 2300 °C
A11	D type : W3%Re/W25%Re thermocouple	0 to 2300 °C
A12	G type : W/W26%Re thermocouple	0 to 2000 °C
A13	N type : Ni-Cr-Si/Ni-Si-Mg	0 to 1300 °C
A14	Pt-100 (Alpha = 0.00385) DIN 43760 (*) (^)	0.0 to 400.0 °C
A15	Pt-100 (Alpha = 0.00385) DIN 43760	-100.0 to 200.0 °C
A16	4-20mA (*) (^)	-9999 to +9999 uom
A17	0-1VDC (^)	-9999 to +9999 uom
A18	0-5VDC (*) (^)	-9999 to +9999 uom

**Restrictions on Input selection :** If the input channel is specified for thermocouple then the same can not be used for Pt-100 input and vice versa. But in either case it can be used for voltage or current input. For both thermocouple and Pt-100 inputs, in single instrument - please select MSI-804-F.

## Ordering Information for Model MSI-804-F:

Model	No. of channels	A- Channel Input (Use above table)	B- EXTERNAL RELAY CARD
MSI-804-F	4 8	<b>CH-1-</b> (To select from A3 to A18) <b>CH-2-</b> (To select from A3 to A18) <b>CH-3-</b> (To select from A3 to A18) <b>CH-4-</b> (To select from A3 to A18) <b>CH-5-</b> (To select from A3 to A18) <b>CH-6-</b> (To select from A3 to A18) <b>CH-7-</b> (To select from A3 to A18) <b>CH-8-</b> (To select from A3 to A18)	<b>B1-</b> 8 CHANNEL RELAY CARD (4 HI + 4 LOW) <b>B2-</b> 16 CHANNEL RELAY CARD (8 HI + 8 LOW) <b>B3-</b> NONE

### Ordering Information for Model MSI-804-U1:

Model	No. of channels	A- Channel Input (Use above table)	B- EXTERNAL RELAY CARD
MSI-804-U1	4 8	CH-1- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-2- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-3- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-4- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-5- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-6- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-7- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18) CH-8- (Pre selected A3,A4,A5,A6,A7,A16,A17,A18)	B1- 8 CHANNEL RELAY CARD (4 HI + 4 LOW) B2- 16 CHANNEL RELAY CARD (8 HI + 8 LOW) B3- NONE

### Ordering Information for Model MSI-804-U2:

Model	No. of channels	A- Channel Input (Use above table)	B- EXTERNAL RELAY CARD
MSI-804-U2	4 8	CH-1- (Pre selected A14,A16,A17,A18) CH-2- (Pre selected A14,A16,A17,A18) CH-3- (Pre selected A14,A16,A17,A18) CH-4- (Pre selected A14,A16,A17,A18) CH-5- (Pre selected A14,A16,A17,A18) CH-6- (Pre selected A14,A16,A17,A18) CH-7- (Pre selected A14,A16,A17,A18) CH-8- (Pre selected A14,A16,A17,A18)	B1- 8 CHANNEL RELAY CARD (4 HI + 4 LOW) B2- 16 CHANNEL RELAY CARD (8 HI + 8 LOW) B3- NONE

### Examples:

Model	No. of channel	A- Channel Input	B- EXTERNAL RELAY CARD
MSI-804-F	4	CH-1- (A3) CH-2- (A4) CH-3- (A16) CH-4- (A18)	B1- 8 CHANNEL RELAY CARD (4 HI + 4 LOW)
MSI-804-U1	8	CH-1- (A3) CH-2- (A3) CH-3- (A4) CH-4- (A4) CH-5- (A17) CH-6- (A17) CH-7- (A18) CH-8- (A18)	B2- 16 CHANNEL RELAY CARD (8 HI + 8 LOW)
MSI-804-U2	8	CH-1- (A14) CH-2- (A14) CH-3- (A16) CH-4- (A16) CH-5- (A17) CH-6- (A17) CH-7- (A18) CH-8- (A18)	B2- 16 CHANNEL RELAY CARD (8 HI + 8 LOW)

Example	Ordering Code	Description
1	MSI-804-F-4-CH-1-(A3)-B1 CH-2-(A4) CH-3-(A16) CH-4-(A18)	This is 4 channel scanner with factory fixed inputs and 8 channel relay card.
2	MSI-804-U1-8-CH-1-(A3)-B2 CH-2-(A3) CH-3-(A4) CH-4-(A4) CH-5-(A17) CH-6-(A17) CH-7-(A18) CH-8-(A18)	This is 8 channel scanner with user selectable input for thermocouple and Voltage, current and 8 x 2 = 16 channel relay card
3	MSI-804-U2-8-CH-1-(A14)-B2 CH-2-(A14) CH-3-(A16) CH-4-(A16) CH-5-(A17) CH-6-(A17) CH-7-(A18) CH-8-(A18)	This is 8 channel scanner with user selectable input for Pt-100 and Voltage, Current and 8 x 2 = 16 channel relay card

REMARK :