



The Model 4003 is a 4 digit (-1999 to 9999) LED universal temperature indicator that can be used in any application where temperature needs to be displayed and controlled. This DIN 48x96, high accuracy, high-quality panel meter is designed for accurate measurement & display (in °C, °F or K) of temperature from thermocouples (selectable from the front pushbuttons) of Type J, K, N, R, S, T, W5 and from RTDs such as PT100. Ni100 RTD is available as an option as well as other thermocouple types. The thermocouple and RTD signals are accurately linearised by the internal micro-controller. Options include programmable analogue output, single, dual, three & four alarms, peak hold, RS232/485 output and more.

Selected options now feature 'Plug & Play' technology, allowing option boards to be ordered separately and field fitted when required.

### FEATURES

- 1/8 DIN enclosure (45 x 92 cut-out), UL 94 V-0 flame retardant, 147mm depth
- Front panel IP 65 / NEMA 4 / UL Type 4 rating, bezel 48 x 96 mm
- -1999 to 9999 display counts, 14.2mm bright red LED display
- Touch button programmable
- Programmable for °C, °F, and K
- Programmable for TC of Type J, K, N, S, R, T, W5
- Programmable for RTDs such as PT100
- Low cost - high performance design
- 'Plug & play' feature available with selected options
- Other thermocouples and RTDs available as an option
- Keypad lock option available at no extra charge
- Meets European EMC directive 89/336/EEC & Low Voltage directive 73/23/EEC
- 3 year guarantee

### OPTIONS

3001-P	2 set points (solid-state relays)	3010	95-265V AC/DC isolated supply
3001-M	2 set points (electro-mechanical relays)	3012	Peak / valley hold
3002	RS 485 serial interface	3013	RS 232 serial interface
3003	0 - 20mA / 4 - 20 mA analogue output	3017-P	3 set points (solid-state relays)
3004-P	1 set point (solid-state relay)	3017-M	3 set points (electro-mechanical)
3004-M	1 set point (electro-mechanical relay)	3018-P	4 set points (solid-state relays)
3006	Isolated outputs (order with 3002/3/7/13)	3018-M	4 set points (electro-mechanical)
3007	0 - 10V analogue output	3020	Ultra bright Red LED display
3008	12 / 24V galvanic isolated DC supply	3025	Keypad lockout
3009	Parallel BCD output	3026	Display hold

**NOTE :** Most of the above options are factory fitted. Customer / field fitted options are available as 'plug-&-play' boards and software activated options. Contact factory for more information.

**NOTE :** Option 3009 cannot be ordered with any alarm options, or with option 3006.

# SPECIFICATIONS

## DISPLAY & OPERATION

Specification	4 digit (-1999 to 9999) bright red LED, 14.2mm high
Setup and calibration	Full digital with visual prompting in plain messages
Memory retention	Full non-volatile operation

## INPUT RANGES

The temperature probes are accurately linearised in the following temperature ranges.

Type J	-25°C to +900°C	<b>NOTE :</b> When the instrument is first installed, it may take a few minutes before accurate readings are shown. This is normally due to the different temperatures between the instrument, panel and thermocouple cable, and these temperature have to stabilise for the cold junction compensation circuit to measure the correct temperature.
Type K	-25°C to +1275°C	
Type N	+200°C to +1200°C	
Type S	+625°C to +1750°C	
Type R	+625°C to +1750°C	
Type T-	-235°C to +25°C	
Type T+	-35.0°C to 330.0°C	
Type W5	+1150°C to +2050°C	
PT100	-165.0°C to +600.0°C (max 999.9°F)	
Ni100 (optional)	-60.0°C to +235.0°C	
PT500 (optional)	-165.0°C to +600.0°C (max 999.9°F)	
PT1000 (optional)	-165.0°C to +600.0°C (max 999.9°F)	
TC resolution	1°C (Type T+ is 0.1°C)	
RTD resolution	0.1°C	

Note 1: Overall accuracy is dependent on the thermocouple type. The table below lists the designated minimum standard error of some thermocouple types:

Type:	J	K	R	S	T
Minimum Std Error:	±2.2C	±2.2C	±1.4C	±1.4C	±0.8C

## ANALOGUE PERFORMANCE

Thermocouple input accuracy	0.5°C, ± 1 display count (note 1)
RTD input accuracy	0.3°C, ± 1 display count
A/D Type & resolution	16 bit dual slope, 40 000 internal counts
A/D conversion rate	Approximately 7 per second
Temperature coefficient	20 ppm / °C typically
Settling time	1 second
Power-up / self test time	1 - 3 seconds
Warm up time	15 minutes typically

## ANALOGUE OUTPUT OPTION

Analog output isolation	Optional, 1500V input/output isolation (order option 3006)
Analog output accuracy	0.1% of full scale, 12-bits
Analog output temp. coefficient	20 ppm / °C typically
Current analogue output load	500 Ω maximum (current is source, not sink)
Voltage analogue output load	1 kΩ minimum

## SET POINT OPTIONS

Electro-mechanical relay:	
Rating	250V AC, 30V DC, 2A, power factor 1
Form type	Form C (change-over contact)
Solid-state relay:	
Rating	400V AC/DC, 0.5A, power factor 1
Form type	Form A (normally open contact)

## SERIAL INTERFACE OPTIONS

Serial interface	RS-232 or RS-485, 2400, 4800, 9600 & 19200 baud
Isolation to input	Optional, 1500V isolation (order option 3006)
Capabilities - Digibus protocol	Full remote control, except for field setup
Capabilities - Ascibus protocol	- continuous output approximately 5 x second - output on demand via print button - output on demand via serial request

## REGULATORY COMPLIANCE

Regulatory requirements

Complies with EC Directives 89/336/EEC & 73/23/EEC

## ENVIRONMENTAL

Operating temperature range

0 to +50°C

Service temperature range

-10 to +60°C

Storage temperature range

-40 to +80°C

Humidity

< 85% non-condensing

## MECHANICAL SPECIFICATIONS

Dimensions

DIN 1/8, 96 mm wide x 48 mm high x 147 mm deep

Protection

Industrial strength, UL 94 V-0 flame retardant ABS plastic

Front panel rating

IP 65 / NEMA 4 / UL Type 4 with supplied o-ring seal

## POWER SUPPLY

### STANDARD

115 / 230 VAC  $\pm$  10% (standard), link selectable, 50/60Hz, 5VA typical

12VDC or 24VDC non-isolated on request, 5VA typical

### OPTIONAL

12VDC isolated switch mode power supply option (Option 3008-12), 5VA typical

24VDC isolated switch mode power supply option (Option 3008-24), 5VA typical

95V-265V AC/DC switch mode power supply option (Option 3010), 5VA typical

## ORDERING EXAMPLE

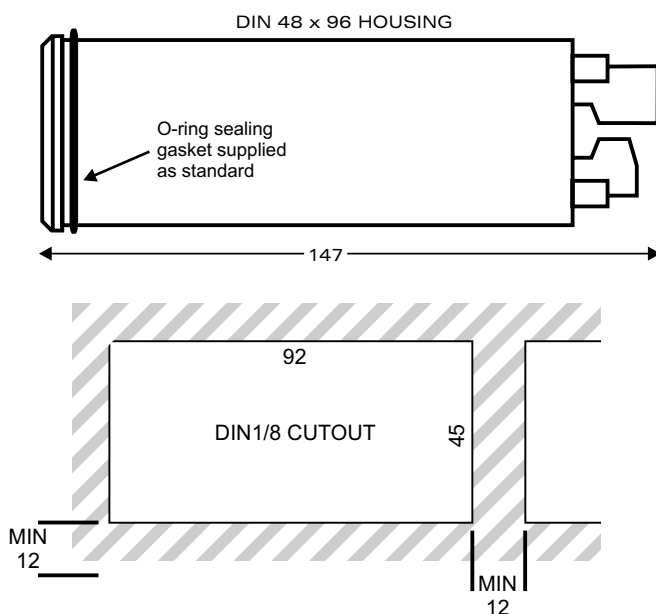
Option modules (see page 1)

**MODEL 4003 - 3001P - 3003**

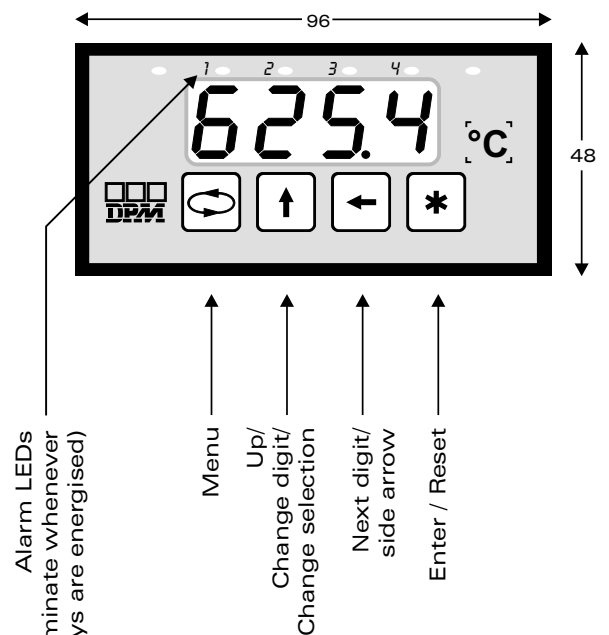
Input : PT100  
 Aux Supply : 230 VAC  
 Analogue output : 4 - 20 mA = 0 - 300.0 °C  
 Set points : 2 set points with solid-state relays

## FRONT PANEL

## DIMENSIONS & CUTOUT



DIN 48 x 96 industrial strength single piece housing  
 Flame retardant ABS plastic (meets UL 94 V-0)  
 Front panel rating is IP65 with supplied O-ring seal



Dimension in mm

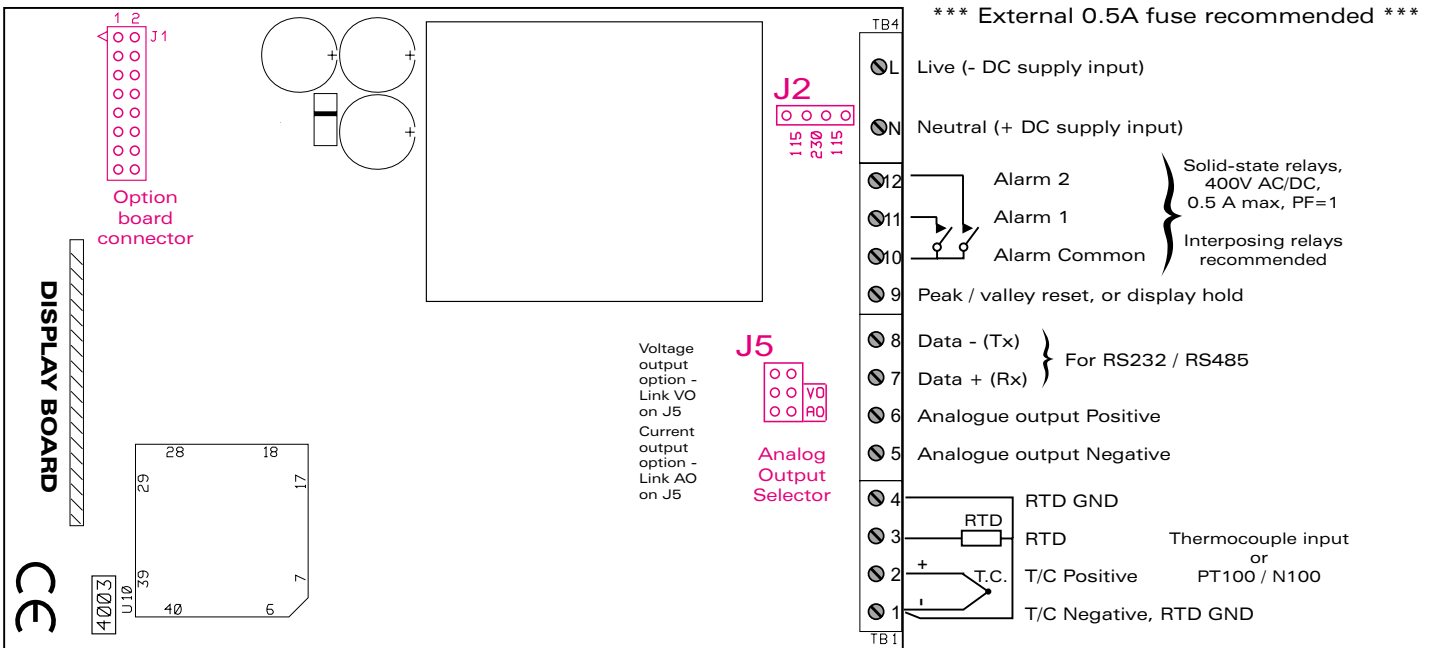
# PINOUT

## PROGRAMMABLE SETTINGS

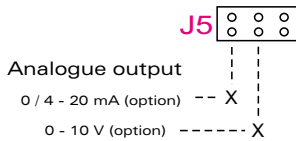
Display	: °C, °F, or Kelvin
Broken TC, or broken RTD	: Selectable high or low
*Analogue output zero	: -1999 to 9999 (for 0 - 20mA / 4 - 20mA or 0 - 10V out)
*Analogue output span	: -1999 to 9999
*Alarm values	: -1999 to 9999
*Alarm hysteresis	: 0 to 255 (default 1)
*Alarm delay	: 0 to 255 seconds (default 0)
*Alarm relay settings	: Selectable HIGH or LOW alarm
*Alarm relay state	: Selectable normally open or normally closed
*RS485 address	: 1 to 127 available (0 is for factory use)
*RS232 / RS485 baud rate	: 2400, 4800, 9600, 19200
*Protocol options	: DPM's DIGIbus or ASCIIbus

\* indicates option

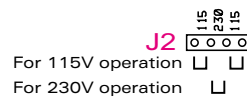
## WIRING & LINKS



### ANALOGUE OUTPUT LINKS



### POWER SUPPLY LINKS



## GUARANTEE

This product is guaranteed against faulty workmanship or defective material, for a period of 3 (three) years from date of delivery by DPM.

DPM undertakes to replace without charge all defective equipment which is returned to it (transportation costs prepaid) during the period of guarantee, provided there is no evidence that the equipment has been abused or mishandled in any way.

DPM reserves the right to alter any specification without notice.

E-mail : [info@dpm.co.za](mailto:info@dpm.co.za)  
 Website : [www.dpm.co.za](http://www.dpm.co.za)



**DISTRIBUTED BY:**