

ExpertAdvice on Temperature Controllers



Temperature Controller N1040



Introduction

The microprocessor based N1040 was conceived for low cost applications and yet achieving high degree of accuracy. It features a short depth enclosure of only 70 mm thus reducing panel space considerably.

Another important innovation is the exclusive removable wiring connection block which translates into ease of use during installation process.

It accepts Pt100 RTDs and thermocouples types J, K and T and features four outputs for control and alarm, universal power supply and automatic tuning of the PID parameters.

The N1040 is set to be the lowest cost temperature controller in the market while keeping high performance standards.

Features

- Accepts thermocouples J, K, T and Pt100 RTD without any hardware change or recalibration
- Auto tuning PID
- Outputs: logic pulse (ideal for driving solid state relays), 1 SPDT relay and 2 SPST relay
- The outputs are programmable for main control or alarm.
- Alarm functions: low, high, differential, low differential, high differential, sensor break
- Two alarm functions can be directed to one single output
- A very efficient universal switching power supply provides high accuracy conditions even during mains voltage fluctuations
- Safe output function allows the user to set control output conditions in case of sensor break or failure
- LBD (Loop Break Detection) function detects failures in the control loop
- Simplified programming menu makes operator programming very easy
- Indelible electronic serial number with 8 digits can be accessed from the display
- Keypad protection prevents unauthorized programming changes
- Silicone rubber frontal keypad
- Front panel protection: IP65

Specifications

- Accepts thermocouples type J range -50 °C to 760 °C, type K range -90 °C to 1370 °C, type T range -100 °C to 400 °C, with cold junction compensation
- Accepts Pt100 RTDs (2 or 3 wires), range from -200 °C to 530 °C, with cable resistance compensation
- Excitation current for Pt100: 170 µA
- Internal resolution: 15 bits
- Display resolution: 12000 levels (from -1999 to 9999)
- Sampling rate of input: Up to 55 per second
- Accuracy: Thermocouples J, K, T: 0.25% of span ± 1 °C. Pt100: 0.2% of span
- Control output: 5 Vdc / 25 mA, 2 SPST relays 1,5 A / 240 Vac / 30 Vdc and 1 SPDT 3 A / 240 Vac / 30Vdc
- Dual 4-digit LED display
- Power:
 - Standard Model: 100 to 240 Vac / 50/60 Hz and 48 to 240 Vdc / $\pm 10\%$
 - 24 V Model: 12 to 24 Vdc / 24 Vac / - 10%, +20%
- Operating environment: 0 to 50 °C, 0 at 80 % RH
- Panel cutout: 46x 46 mm
- Consumption: 6 VA maximum
- Protection rate: IP65 front panel, IP30 back enclosure
- Enclosure/front panel material: PC (UL94 V-2)
- Approximate weight: 75 g
- CE and UL approved
- Dimensions: 48 x 48 x 80 mm

Sensors and maximum ranges

Type	Characteristics
J	Range: -110 to 950 °C (-166 to 1742 °F)
K	Range: -150 to 1370 °C (-238 to 2498 °F)
T	Range: -160 to 400 °C (-256 to 752 °F)
Pt100	Range: -200 to 850 °C (-328 to 1562 °F)

How To Specify

Model	Description
N1040-PR	Input: PT100/J/K/T - Output: 1 SPST relay + pulse. Power 100~240 Vca and 48~240 Vcc.
N1040-PRR	Input: PT100/J/K/T - Output: 2 SPST relays+ pulse. Power. 100~240 Vca and 48~240 Vcc.
N1040-PRRR	Input: PT100/J/K/T - Output: 2 SPST relays + 1 SPDT relay + pulse. Power 100~240 Vca and 48~240 Vcc.

Electrical Connections

