

Panel Meters

Temperature

MODEL DP5T - UNIVERSAL TEMPERATURE DISPLAY

- THERMOCOUPLE AND RTD INPUTS
- HIGH ACCURACY 0.1 OR 1 DEGREE READOUT; VARIABLE ROUNDING FACTOR
- CONFORMS TO ITS-90 STANDARDS
- OFFSET PARAMETER FOR MINOR READOUT ADJUSTMENTS
- CUSTOM UNITS OVERLAY
- MAX AND MIN READING MEMORY
- TIME-TEMPERATURE INTEGRATOR
- PROGRAMMABLE FUNCTION KEYS
- PROGRAMMABLE DIGITAL CONTROL INPUT
- UNIVERSAL AC SUPPLY



UL RECOGNIZED
USA



UL RECOGNIZED
CANADA



EMC
COMPLIANT



NEMA 4X /
IP65



PARAMETER
LOCKOUT



FRONT PANEL
PROGRAMMABLE

Product Features

The DP5T (DP5 Temperature Meter) embodies many features and performance capabilities to suit a wide range of indication requirements. The 4 ½ digit meter employs advanced technology for a stable, high accuracy, drift free readout.

The temperature meter accepts inputs from a variety of thermocouple and RTD inputs, including 10 ohm copper and 120 ohm nickel, while conforming to the standards of ITS-90. The meter has a direct readout mode in mV or ohms to aid in sensor verification and test modes.

The meter provides a Max and Min reading memory with programmable capture time. The capture time is used to prevent detection of false max and min readings which may occur during start-up or unusual process events.

The signal totalizer (integrator) can be used to compute a time-temperature product. This can be used to provide a readout

of temperature integration, useful in curing and sterilization applications.

Once the meter has been initially configured, the parameter list may be locked out from further modification in it's entirety.

The meter has been specifically designed for harsh industrial environments. With NEMA 4X/IP65 sealed bezel and extensive testing of noise effects to CE requirements, the meter provides a tough and reliable local readout.

UNITS LABEL KIT (PAXLBK)

Each meter has a units indicator with backlighting that can be customized using the Units Label Kit. The backlight is controlled in the programming.

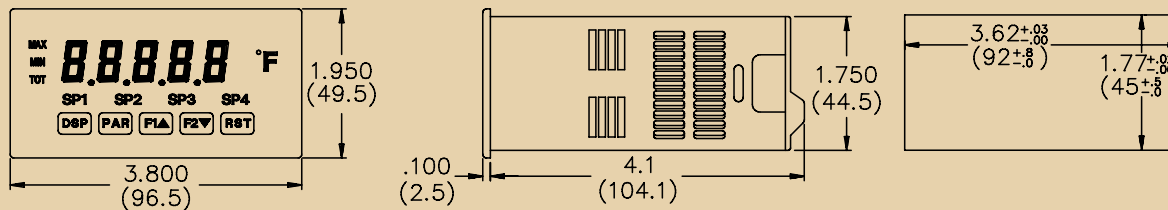
Note: Users requiring Alarms, Analog Outputs, and/or Communications should select Model PAXT.



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DOC # 05004

DIMENSIONS "In inches (mm)"



General Specifications

1. **DISPLAY:** 5 digit, 0.56" red LED, (-19999 to 99999)

2. **POWER:**

AC Versions (DP5T0000):

AC Power: 85 to 250 VAC, 50/60 Hz, 15 VA

Isolation: 2300 Vrms for 1 min. to all inputs and outputs.

(300 V working)

DC Versions (DP5T0010):

DC Power: 11 to 36 VDC, 11 W

AC Power: 24 VAC, ± 10%, 50/60 Hz, 15 VA

Isolation: 500 Vrms for 1 min. to all inputs and outputs (50 V working).

3. **UPDATE RATES:**

A/D conversion rate: 10/readings sec

Step response: 300 msec typ., 500 msec max. to within 99% of final readout value (digital filter disabled)

Display update rate: 1 to 10 updates/sec

Max./Min. capture delay time: 0 to 3275 sec

4. **ANNUNCIATORS:**

MAX - max readout selected

MIN - min. readout selected

TOT - totalizer readout selected, flashes when total overflows

Units Label - software controlled units label backlight

5. **KEYPAD:** 3 programmable function keys, 5 keys total

6. **TOTALIZER:**

Time Base: second, minute, hour, or day

Time Accuracy: 0.01% typical

Decimal Point: 0 to 0.0000

Scale Factor: 0.001 to 65.000

Low Signal Cut-out: -19,999 to 99,999

Total: 9 digits, display alternates between high order and low order readouts

7. **ENVIRONMENTAL CONDITIONS:**

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -40 to 60°C

MODEL DP5T - UNIVERSAL TEMPERATURE INPUT

General Specifications Continued

- Operating and Storage Humidity:** 0 to 85% max. non-condensing
Altitude: Up to 2000 meters
8. **CERTIFICATIONS AND COMPLIANCES:**
SAFETY
 EN 61010-1, IEC 1010-1
 UL Recognized Component, File #E179259
 Recognized to U.S. and Canadian requirements under the Component Recognition Program of Underwriters Laboratories, Inc.
- ELECTROMAGNETIC COMPATIBILITY**
 Immunity to EN 50082-2
 Emissions to EN 50081-2
9. **CONNECTIONS:** High compression cage-clamp terminal block
Wire Strip Length: 0.35" (9mm)
Wire Gauge Capacity: One 14 AWG (2.55 mm) solid, two 18 AWG (1.02 mm), or four 20 AWG (0.61 mm).
10. **CONSTRUCTION:** This unit is rated for NEMA 4X/IP65 indoor use. IP20 Touch safe. Installation Category II, Pollution Degree 2. One piece bezel/case. Flame resistant. Synthetic rubber keypad. Panel gasket and mounting clip included.
11. **WEIGHT:** 7 oz. (200 g)

Input Specifications

1. **A/D CONVERTER:** 16 bit resolution
2. **FAILED SENSOR RESPONSE:**
Open thermocouple or RTD: display flash [OPEN] message
Shorted RTD: display flash [SHORT] message
3. **RANGE OVERLOAD RESPONSE:**
 Display flashes [LOL] at approximately 105% above range
 Display flashes [ULUL] at approximately -5% below range
4. **READOUT:**
Resolution: Variable: 0.1, 0.2, 0.5, or 1, 2, or 5 degree
Scale: F or C
Offset Range: -19,999 to 99,999 display units
5. **THERMOCOUPLE INPUTS:**
Input Impedance: 20 MΩ
Lead Resistance Effect: 0.03 μV/ohm
Max. Continuous Overvoltage: 30 V
6. **RTD INPUTS:**
Type: 3 or 4 wire, 2 wire can be compensated for lead wire resistance
Excitation current: 100 ohm range: 165 μA
 10 ohm range: 2.6 mA
Lead resistance: 100 ohm range: 10 ohm/lead max.
 10 ohm range: 3 ohms/lead max.
Max. continuous overload: 30 V

| Input Type | Range | Accuracy | Accuracy | Standard |
|----------------------------------|---------------|--------------|-------------|----------------------|
| | | (18 to 28°C) | (0 to 50°C) | |
| 100 ohm Pt alpha = .00385 | -200 to 850°C | 0.4°C | 1.6°C | IEC 751 |
| 100 ohm Pt alpha = .003919 | -200 to 850°C | 0.4°C | 1.6°C | no official standard |
| 120 ohm Nickel alpha = .00672 | -80 to 260°C | 0.2°C | 0.5°C | no official standard |
| 10 ohm Copper alpha = .00427 | -100 to 260°C | 0.4°C | 0.9°C | no official standard |

| Input Type | Range | Accuracy (18 to 28°C) | Accuracy (0 to 50°C) | Standard | Wire Color | |
|---------------|----------------------------------|--------------------------|-------------------------|-----------------|-----------------------|------------------------|
| | | | | | ANSI | BS 1843 |
| T | -200 to 400°C -270 to -200°C | 1.2°C ** | 2.1°C | ITS-90 | (+) blue (-) red | (+) white (-) blue |
| E | -200 to 871°C -270 to -200°C | 1.0°C ** | 2.4°C | ITS-90 | (+) purple (-) red | (+) brown (-) blue |
| J | -200 to 760°C | 1.1°C | 2.3°C | ITS-90 | (+) white (-) red | (+) yellow (-) blue |
| K | -200 to 1372°C -270 to -200°C | 1.3°C ** | 3.4°C | ITS-90 | (+) yellow (-) red | (+) brown (-) blue |
| R | -50 to 1768°C | 1.9°C | 4.0°C | ITS-90 | no standard | (+) white (-) blue |
| S | -50 to 1768°C | 1.9°C | 4.0°C | ITS-90 | no standard | (+) white (-) blue |
| B | 100 to 300°C 300 to 1820°C | 3.9°C 2.8°C | 5.7°C 4.4°C | ITS-90 | no standard | no standard |
| N | -200 to 1300°C -270 to -200°C | 1.3°C ** | 3.1°C | ITS-90 | (+) orange (-) red | (+) orange (-) blue |
| C (W5/W26) | 0 to 2315°C | 1.9°C | 6.1°C | ASTM E988-90 | no standard | no standard |

** The accuracy over the interval -270 to -200°C is a function of temperature, ranging from 1°C at -200°C and degrading to 7°C at -270°C. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.

7. **DIRECT READOUT:**
Input range: -10 to 65 mV
 0 to 400 ohms, high range
 0 to 25 ohms, low range
8. **LOW FREQUENCY NOISE REJECTION:**
Normal Mode: > 60 dB @ 50 or 60 Hz ±1%, digital filter off
Common Mode: >100 dB, DC to 120 Hz
9. **LOGIC INPUT:** One software defined user input, jumper selectable for sink/source logic
Isolation To Sensor Input Common: Not isolated
Response Time: 50 msec. max.
Max. Continuous Input: 30 VDC

| INPUT STATE | SINK | SOURCE |
|-------------|---------------------------|---------------------------|
| | 22 KΩ pull-up to +5 V | 22 KΩ pull-down |
| Active | V _{IN} < 0.7 VDC | V _{IN} > 2.5 VDC |
| Inactive | V _{IN} > 2.5 VDC | V _{IN} < 0.7 VDC |

Ordering Information

| MODEL NO. | DESCRIPTION | PART NUMBERS |
|-----------|--|--------------|
| DP5T | Thermocouple and RTD Panel Meter, AC Powered | DP5T0000 |
| | Thermocouple and RTD Panel Meter, DC/24VAC Powered | DP5T0010 |
| | Units Label Kit Accessory | PAXLBK10 |