

1/8 DIN Digital Panel Temperature Meters For Thermocouple and RTD Inputs

DP63500-T Series



- ✓ Thermocouple and RTD Panel Meter
- ✓ 5-Digit, 14.2 mm (0.56") LED
- ✓ Green or Red Sunlight Readable Display
- ✓ Conforms to ITS-90 Standards
- ✓ °F or °C Unit Overlay With Backlight
- ✓ Field Upgradeable Option Cards
- ✓ NEMX 4X (IP65)

The DP63500-T Series panel meters offer many features and performance capabilities suitable for a wide range of industrial applications. These meters accept thermocouple or RTD inputs. The optional plug-in output cards allow the opportunity to configure the meter for present applications, while providing easy upgrades for future needs.

The meters have a bright, 14.2 mm (0.56") LED display. The unit is available with a red, sunlight-readable or a standard green LED. The intensity of display can be adjusted from dark room to sunlight readable, making it ideal for viewing in variable light applications.

The meters provide a maximum and minimum reading memory with programmable capture time. The capture time is used to prevent detection of false max or min readings which may occur during start-up or unusual process events. The meters have 4 setpoint outputs, implemented on plug-in option cards.



DP63500-T shown actual size.

The plug-in cards provide dual form "C" relays (5 A), quad form "A" (3 A), or either quad-sinking or quad-sourcing open collector logic outputs. The setpoint alarms can be configured to suit a variety of control and alarm requirements. Communication and bus capabilities are also available as option cards; these include RS232, RS485, and MODBUS®.

Specifications

Display: 5-digit, 14.2 mm (0.56") red sunlight-readable or standard green LEDs, (-19999 to 99999)

Power:

AC Versions:

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

Isolation: 2300 Vrms for 1 minute to all inputs and outputs

DC Power: 11 to 36 Vdc, 11 W (derate operating temperature to 40°C if operating <15 Vdc and 3 plug-in option cards are installed)

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

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

Keypad: 3 programmable function keys, 5 keys total

A/D Converter: 16-bit resolution

Update Rates:

A/D Conversion Rate: 20 readings/s

Step Response: 200 ms max to within 99% of final readout value (digital filter and internal zero correction disabled), 700 ms max (digital filter disabled, internal zero correction enabled)

Display Update Rate:

1 to 20 updates/s

Setpoint Output On/Off Delay Time:

0 to 3275 seconds

Analog Output Update Rate:

0 to 10 s

Max/min Capture Delay Time:

0 to 3275 s

Ice Point Compensation:

User value (0.00 to 650.00 μV/°C)

Memory: Non-volatile EEPROM retains all programmable parameters and display values

Environmental Conditions:

Operating Temperature Range:

0 to 50°C (32 to 122°F) [0 to 45°C (32 to 113°F) with all 3 plug-in cards installed]

Storage Temperature Range:

-40 to 60°C (-40 to 140°F)

Operating and Storage Humidity:

0 to 85% max RH non-condensing

Altitude:

Up to 2000 m (6563')

Connections:

High-compression, cage-clamp terminal block

Construction:

This unit is rated for NEMA 4X (IP65) outdoor use, IP20 touch-safe, Installation Category II, Pollution Degree 2, 1-piece bezel/case, flame-resistant, synthetic rubber keypad—panel gasket and mounting clip included

Weight: 295 g (10.4 oz)

Thermocouple Inputs

Resolution: Variable: 0.1, 0.2, 0.5, or 1, 2, or 5 degrees

Scale: °F or °C

Offset Range: -19,999 to 99,999 display units

Input Impedance: 20 MΩ

Lead Resistance Effect: 0.03 μV/Ω

Maximum Continuous Overvoltage: 30 V

Input Type	Range	Accuracy* (18 to 28°C)	Accuracy* (0 to 60°C)
T	-200 to 400°C (-328 to 752°F) -270 to -200°C (-454 to -328°F)	1.2°C**	2.1°C
E	-200 to 871°C (-328 to 1600°F) -270 to -200°C (-454 to -328°F)	1.0°C**	2.4°C
J	-200 to 760°C (-328 to 1400°F)	1.1°C	2.3°C
K	-200 to 1372°C (-328 to 2502°F) -270 to -200°C (-454 to -328°F)	1.3°C**	3.4°C
R	-50 to 1768°C (-58 to 3214°F)	1.9°C	4.0°C
S	-50 to 1768°C (-58 to 3214°F)	1.9°C	4.0°C
B	100 to 300°C (100 to 572°F) 300 to 1820°C (572 to 3308°F)	3.9°C 2.8°C	5.7°C 4.4°C
N	-200 to 1300°C (-328 to 2372°F) -270 to -200°C (-454 to -328°F)	1.3°C**	3.1°C
C	0 to 2315°C (32 to 4199°F)	1.9°C	6.1°C

* After 20 minute warm-up. Accuracy is specified in 2 ways—accuracy over an 18 to 28°C (64 to 82°F) in a 15 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) in a 0 to 85% RH (non-condensing) environment. Accuracy specified over the 0 to 50°C (32 to 122°F) operating range includes meter tempco and ice point tracking effects. The specification includes the A/D conversion errors, linearization conformity, and thermocouple ice point compensation. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.

** The accuracy over the interval -270 to -200°C (-454 to -328°F) 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.

RTD Inputs

Type: 3- or 4-wire, 2-wire can be compensated for lead wire resistance

Excitation Current:

100 Ω Range: 165 μA

10 Ω Range: 2.6 mA

Lead Resistance:

100 Ω Range: 10 Ω/lead max

10 Ω Range: 3 Ω/lead max

RTD Inputs Table

Input Type	Range	Accuracy* (18 to 28°C)	Accuracy* (0 to 50°C)
100 Ω Pt alpha = 0.00385	-200 to 850°C (-328 to 1562°F)	0.4°C	1.6°C
100 Ω Pt alpha = 0.003919	-200 to 850°C (-328 to 1562°F)	0.4°C	1.6°C
120 Ω Nickel alpha = 0.00672	-80 to 260°C (-112 to 500°F)	0.2°C	0.5°C
10 Ω Copper alpha = 0.00427	-100 to 260°C (-148 to 500°F)	0.4°C	0.9°C

* After 20 minute warm-up. Accuracy is specified in 2 ways—accuracy over an 18 to 28°C (64 to 82°F) in a 15 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) in a 0 to 85% RH (non-condensing) environment. Accuracy specified over the 0 to 50°C (32 to 122°F) operating range includes meter tempco and ice point tracking effects. The specification includes the A/D conversion errors, linearization conformity, and thermocouple ice point compensation. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.

Custom Range

Custom Range: Up to 16 data point pairs

Input Range: -10 to 65 mV

0 to 400 Ω: High range

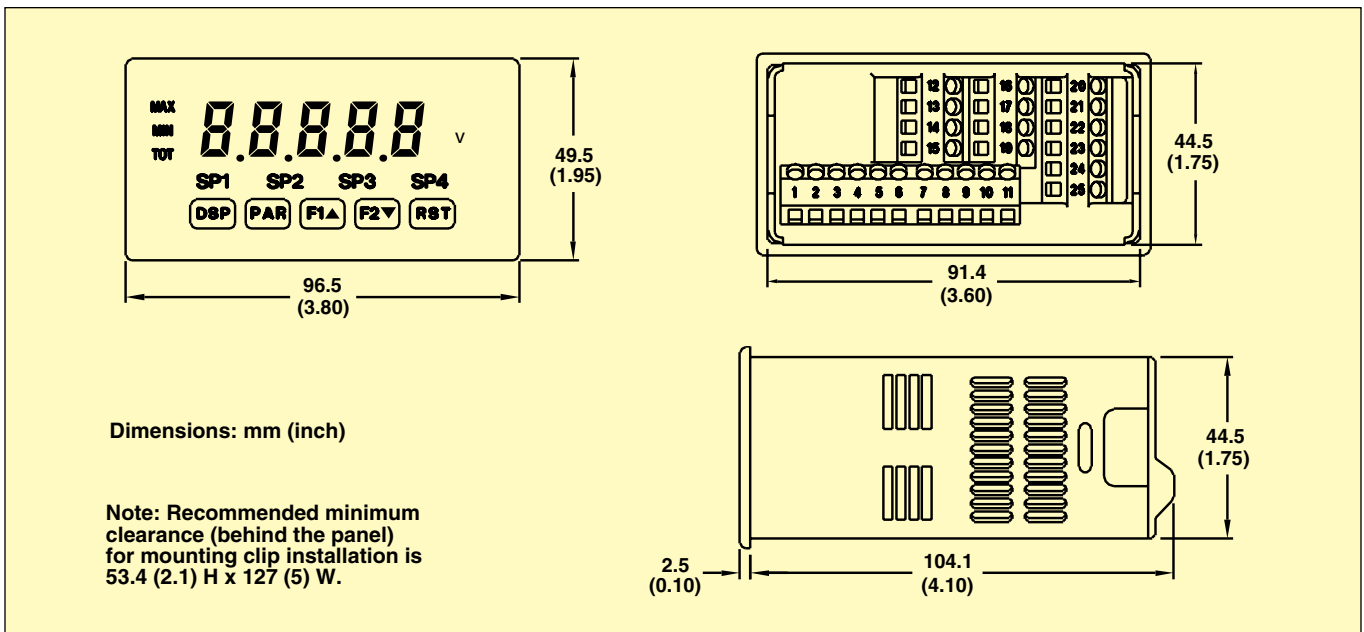
0 to 25 Ω: Low range

Display Range: -19999 to 99999

Custom Range Table

Input Type	Range	Accuracy* (18 to 28°C)	Accuracy* (0 to 50°C)
Custom mV Range	-10 to 65 mV (1 μV res)	0.02% of rdg + 4 μV	0.12% of rdg + 5 μV
Custom 100 Ω Range	0 to 400 Ω (10 MΩ res)	0.02% of rdg + 0.04 Ω	0.12% of rdg + 0.05 Ω
Custom 10 Ω Range	0 to 25 Ω (1 MΩ res)	0.04% of rdg + 0.005 Ω	0.20% of rdg + 0.007 Ω

* After 20 minute warm-up. Accuracy is specified in 2 ways—accuracy over an 18 to 28°C (64 to 82°F) in a 15 to 75% RH environment and accuracy over a 0 to 50°C (32 to 122°F) in a 0 to 85% RH (non-condensing) environment. Accuracy specified over the 0 to 50°C (32 to 122°F) operating range includes meter tempco and ice point tracking effects. The specification includes the A/D conversion errors, linearization conformity, and thermocouple ice point compensation. Total system accuracy is the sum of meter and probe errors. Accuracy may be improved by field calibrating the meter readout at the temperature of interest.



To Order	
Model No.	Description (Display Meter Only, No Outputs)
DP6350-T	Red display, 85 to 250 Vac, 50/60 Hz
DP6350-T-LV	Red display, 11 to 36 Vdc, 24 Vac
DP6350-T-GN	Green display, 85 to 250 Vac, 50/60 Hz
DP6350-T-GN-LV	Green display, 11 to 36 Vdc, 24 Vac

Optional Plug-In Output Cards (Field Installable)

Model No.	Description
Setpoint Alarms (Only 1 Alarm Card Can Be Installed Into Base Meter)	
LDP6-CDS10	Dual setpoint relay output card
LDP6-CDS20	Quad setpoint relay output card
LDP6-CDS30	Quad setpoint sinking open collector output card
LDP6-CDS40	Quad setpoint sourcing open collector output card
Analog Output	
LDP6-CDL10	Analog output card
Communications (Only 1 Communications Card Can Be Installed Into Base Meter)*	
LDP6-CDC10	RS485 serial communications output card with terminal block
LDP6-CDC1C	Extended RS485 serial communications output card with dual RJ11 connector
LDP6-CDC20	RS232 serial communications output card with terminal block
LDP6-CDC2C	Extended RS232 serial communications output card with 9-pin D connector
LDP6-CDC40	MODBUS communications card
LDP6-CDC4C	Extended MODBUS communications card with dual RJ11 connector

* Free software available online

Comes complete with operator's manual.

Note: Adding option cards—meters can be fitted with up to 3 optional plug-in cards, however, only 1 card from each function type can be installed at a time. The function types include setpoint alarms, analog output and communications. The cards can be installed initially or at a later date. Each optional plug-in card is shipped with installation and programming instructions.

Ordering Examples: DP6350-T-GN, green display, 85 to 250 Vac, 50/60 Hz, LDP6-CDL10 analog output card.

DP6350-T, red display, 85 to 250 Vac, 50/60Hz.

Accessory

Model No.	Description
DPP-5	1/8 DIN panel punch