User's Guide

DP551-TC & DP556-TC Series
Wall Mount Thermocouple Meters
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The information contained in this document is believed to be correct but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, patient connected applications.
Introduction

The DP550 thermocouple series of wall mounting meters are microprocessor driven and fully self calibrating, offering exceptional accuracy and long term stability. They are available in single or six input versions. They versions are switch selectable for one of six thermocouple types. The large backlit LCD display is easy to read in most light conditions.

Other models in the DP550 series are available to read both RTD and 4-20mA inputs.

Features

- Large Backlit LCD
- °C/°F Switchable
- 0.1/1 Auto ranging
- Optional Rechargeable Battery Pack
- Selectable Thermocouple type.
- Splash Proof front Panel NEMA 4 (IP65)
- Optional Alarm Output
- Open Circuit Sensor Detection
Unpacking Instructions
Remove the Packing List and verify that you have received all equipment, including the following:

- DP550 Series meter
- Operators Manual
- °C label (taped to DP550)
- Fixing Screws (3)

After unpacking, inspect the instrument for any physical damage that may have occurred in shipping. Save all packing materials and report any damage to the carrier immediately.

Installation

Mechanical
There are three main mounting holes for the instrument:

- Keyhole slot (located in the middle).
- Two mounting slots (accessible under the lower front cover)

Mounting Procedure
1. Remove lower front cover by removing two holding screws.
2. Secure to wall first by using the top keyhole slot.
3. Mark positions of mounting slots 'A' and 'B' (refer to Fig. 2).
4. Secure to wall using the keyhole slot and two mounting slots.

Wiring

Note:
While the instruments have been designed with ease of installation as an important criteria, they should only be installed by a qualified electrician.

Power Connections (refer to Fig. 1 and 2)
1. Remove lower front cover, loosen the middle cable gland, install cable through the cable gland.
2. Connect to the terminal block under the cover (Note for 9-30V ac/dc: connect power wires to either "AC High" and "AC Low" per Fig. 2).
3. Tighten cable gland.
4. Re-install front cover.

Sensor Connections (refer to Fig. 1 and 2)
1. Remove lower front cover, loosen the left cable gland, install cable(s) through the cable gland.
2. Connect to the terminal blocks (per Fig 2) under the cover.
3. Tighten cable gland.
4. Re-install front cover.

Alarm Connections (optional, refer to Fig. 1 and 2)
1. Remove lower front cover, loosen the right cable gland, install cable(s) through the cable gland.
2. Connect to the Alarm Output terminal block (per Fig. 2) under the cover.
3. Connect wires depending on whether you want the contacts to be 'NO' normally open or 'NC' normally closed.
4. Tighten cable gland.
5. Re-install front cover.
Setup

Select Thermocouple Type (refer to Fig. 2) Type J is preset at the factory.

To change the thermocouple type, use the appropriate DIP SWITCH settings for #1, 2, 3 accessible beneath the front cover.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>T</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>N</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>J</td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td>E</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
</tr>
</tbody>
</table>

°C / °F Selection (refer to Fig. 2) °F is preset at the factory.

1. To change the temperature scale, select the appropriate DIP SWITCH setting for #4 accessible under the front cover. (ON = °F, OFF = °C)
2. Open clear plastic display cover by inserting a screw driver and turning the screw in a counter-clockwise direction 90 degrees. Press the clear plastic tabs inward to release the clear display cover.
3. Under the clear plastic display cover, affix the °C label over the °F on the faceplate.

Backlight ON / Off Switch (refer to Fig. 2) Backlight is preset ON at the factory.

To turn the backlight OFF remove the lower front cover and find the switch marked 'LIGHT'. Pull the switch up to turn OFF the backlight.

Error Codes: Open Circuit Sensor Detection

Bars (---) will appear on the display if either the probe is defective or the temperature being measured is out of range.

Optional Features

To Set Alarm Values

1. Remove the front cover.
2. Press the button marked 'MENU'.
3. The message 'AL HIGH' (Alarm High) will be displayed.
4. Press either the 'INC' (increase) key or 'DEC' (decrease) key to reach the desired high alarm limit.
5. Press the 'MENU' key again to adjust the 'AL LOW' (alarm low) in the same manner.
6. Press the 'MENU' key once more to save the changes and exit.

BATTERY POWER (Optional)

The batteries are continuously charged whenever the unit is connected to its power source.

To conserve the battery life two switches are provided:

1. 'ON/OFF' power switch is located on the right hand side of the instrument.
2. 'LIGHT' switch is used to switch the backlight of the display off. The backlight significantly effects the battery life.

With Backlight: 3.5 Hours
Without Backlight: 2000 Hours
Specifications

Environmental

Ambient Operating Range : 0 to 50 °C
(32 to 122°F)
Storage Temperature : -40 to 50°C
(-40 to 122°F)
Humidity : TO 70% RH
Front Panel Protection : NEMA 4 (IP65)

General

Dimensions : 7.28 X 8.38 X4.45 inches
(185 X 213 X 113 mm)
Weight : 2.5lbs (1.1Kg)
Packed Dimensions : 9.45 X 12 X 9.06 inches
240 X 305 X 230 mm
: 1.5 Kg

Electrical

Inputs : Thermocouple J, K, T, E, N, R;
Display : Backlit LCD 1 inch (25mm) Character Height
Accuracy : ±0.25% of reading.
+ 0.2 °C;
Resolution : 0.1 to 999.9 1 above 1000
Temperature Coefficient : 0.01% of reading/°C
Cold Junction Compensation : 0.0075°
Optional Alarm Output : Relay 5A@
: 30Vdc, 5A@120Vac
Optional Battery Life : With Backlight 3.5 Hrs:
: Without Backlight 2000 Hrs
Power : 110 Vac, 240Vac or 9-30V ac / dc
Measurement Ranges

<table>
<thead>
<tr>
<th>RANGE TABLE</th>
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<tbody>
<tr>
<td><strong>°C</strong></td>
</tr>
<tr>
<td>J</td>
</tr>
<tr>
<td>K</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>N</td>
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<tr>
<td>R</td>
</tr>
</tbody>
</table>

Notes:

Strong RF fields may adversely affect measurement accuracy.
To avoid earth ground problems, it is recommended that wherever possible, insulated sensors be used.
If grounded sensors are used, care must be taken to minimize the common mode voltage between the sensor input and the power supply to the instrument.

Ordering Codes for Thermocouple Meter

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP551-TC</td>
<td>Single Input TC Meter</td>
</tr>
<tr>
<td>DP556-TC</td>
<td>Six Input TC Meter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output and Power options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-ALM</td>
<td>Alarm Relay</td>
</tr>
<tr>
<td>-BATT</td>
<td>Battery Pack Power</td>
</tr>
<tr>
<td>-9-30</td>
<td>9-30 V ac/dc Power</td>
</tr>
<tr>
<td>-230</td>
<td>230 V ac Power</td>
</tr>
</tbody>
</table>

NOTE

Other models in the DP5.50 series are available to read both RTD and 4-20mA inputs.

Figures

**Figure 1**

[Image of a device with labels: ON / OFF Switch (Battery option only), Input connection gland, Power Connection gland, Alarm Connection gland]
OMEGA warrants this unit to be free of defects in materials and workmanship and to give satisfactory service for a period of 13 months from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. If the unit should malfunction, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear or which are damaged by misuse are not warranted. This includes contact points, fuses, and triacs.

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