



## 2871 Series Digital Panel Meter

- 4 Ranges: 200° F, 1200° F, 200° C, 650°C
- Designed for J Type Thermocouple Inputs
- Fast Step Response Time
- Input Edge Connector
- 3-1/2 digit, 0.56" Red LED Display
- Model 2871 Requires 120 VAC Power Supply
- Additional Rear Terminal Connector Available
- Optional "U" Shaped Mounting Bracket
- Optional Display Hold



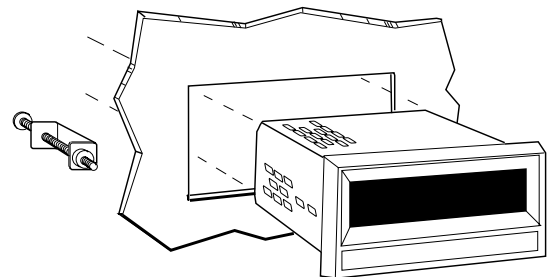
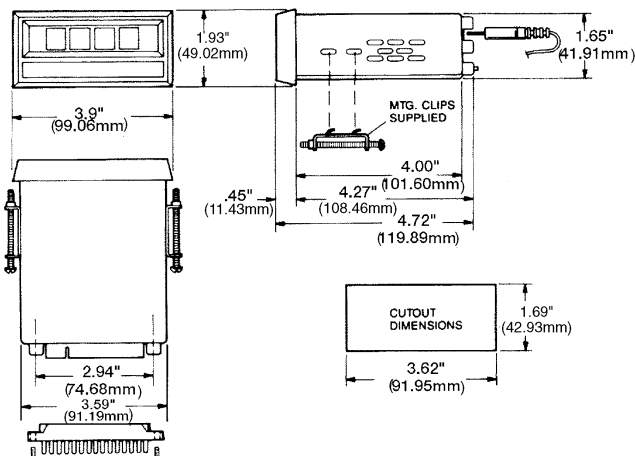
Simpson's 2871 Series Temperature meters offer high accuracy with fast step response time. These meters have a wide 0-85% humidity operating range, automatic polarity, and overrange indication.

The large 3-1/2-digit display (0.56" high) is easily read from a distance of about 25 feet. Panel cutout adapters are available for 1/8 DIN panel cutouts. In addition, a large "U"

shaped mounting bracket is available for applications where the panel strength is unknown or weak.

Optional Display Hold can be activated from the rear connector, and activated with a switch (not supplied). Thermocouples are ordered separately from the meter (maximum allowable resistance is 50Ω, with a maximum length of 50 feet of 24 gauge wire).

### Installation and Panel Cutout



#### Mounting Requirements

The 2871 indicators are installed with the mounting hardware provided. Slide the meter through the panel cutout. Next, insert a side mounting bracket to each side of the meter. Use the two holes located near the bezel to attach them to the meter. Slide the brackets back until they lock into the meter. Turn the screws in each bracket until they firmly contact the panel surface. Attach the wiring connections to the meter.

## Specifications

### DISPLAY

Type: 7-segment, Red LED

Height: 0.56" (14.2mm)

Decimal point: Fixed with range

Overrange indication: Digits blank except "1"

### POWER REQUIREMENTS

AC Voltage: 120V,  $\pm 10\%$ , 50Hz to 400Hz, 5VA

Rated Circuit to Ground Voltage: 250VDC

### ACCURACY @23°C $\pm 2^\circ\text{C}$

200°F:  $\pm(0.2\%$  of reading + 1.8°) 0°-200°F

1200°F:  $\pm(0.2\%$  of reading + 2.0°) 150°-1000°F

200°C:  $\pm(0.2\%$  of reading + 2.5°) 30°-200°C

### ACCURACY @23°C $\pm 2^\circ\text{C}$ (cont.)

650°C:  $\pm(0.2\%$  of reading + 2.0°) 50°-535°

### ENVIRONMENTAL

Operating Temperature: 0 to 40°C

Storage Temperature: -40 to 60°C

Relative Humidity: 0 to 85%, non-condensing

Cold Junction Compensation:

$\pm 0.1^\circ/1^\circ$  change in ambient, 0-50°C

Warmup time: Less than 15 minutes

### CONVERSION

Technique: Dual-slope integration

Rate: 3 sample per second, nominal

### MECHANICAL

Bezel: 1.93" x 3.9" (49mm x 99mm)

Depth: 4.72" (120mm)

Panel cutout: 1.68" x 3.622" (42.72mm x 92mm)

Weight: 12.5oz (354.3g)

### INPUTS : Thermocouples

| Range  | Maximum Indication | Resolution Input |
|--------|--------------------|------------------|
| 200°F  | 199.9°F            | 0.1°F            |
| 1200°F | 1200°F             | 1.0°F            |
| 200°C  | 199.9°C            | 0.1°C            |
| 650°C  | 650°C              | 1.0°C            |

## Connections



These instruments are designed for maximum safety to the operator when mounted in a panel according to instructions. They are not to be used unmounted or for exploratory measurements in unknown circuits.

### Pin Connections

The signal and power inputs are made on the rear connector. Make sure the connector is firmly attached to the meter. Connections for each pin are summarized in the table below. This allows the meter to be used in multiple locations by moving it from connector to connector. Additional connectors are available.

### Input Signal

The "+" signal input is connected to Pin S. The "-" signal input (common) is connected to Pin P.

### Display Hold

This optional feature must be specified when ordering. By shorting Pin H to Pin J, the displayed value can be held indefinitely. This short can be controlled by a switch (optional).

This will allow the operator to flip the switch (holding the display) and to take a reading. The switch is then turned off, and the display functions normally again.

### Supply Power

If the unit is VAC powered, attach the neutral to Pin C. The Ground is connected to Pin #1 and A. The High (or Hot) is connected to Pin E. If your application changes and you want the unit to be 220 VAC power supplied, return the unit to our factory or to an Authorized Service Center. If the unit is powered by VDC, attach the VDC return to Pin #1 and A. The "+" VDC is connected to Pin #4.

### Remote Decimal Point

This option allows you to remotely select different decimal points without opening the meter to make the changes. This option can be installed by the factory or one of our Authorized Service Centers. Remote Decimal Point uses the same terminal points as BCD outputs, eliminating the BCD capabilities if specified.

| Pin Number | 2871 Circuit | Pin Number | 2871 Circuit    |
|------------|--------------|------------|-----------------|
| 1          | 3rd wire GND | A          | 3rd wire GND    |
| 2          | NC           | B          | NC              |
| 3          | NC           | C          | 120 VAC Neutral |
| 4          | NC           | D          | NC              |
| 5          | NC           | E          | 120 VAC High    |
| 6          | NC           | F          | NC              |
| 7          | NC           | H          | DP Common       |
| 8          | NC           | J          | Digital Common  |
| 9          | NC           | K          | (DP3)           |
| 10         | (-REF/HOLD)  | L          | (DP2)           |
| 11         | (+REF)       | M          | (DP1)           |
| 12         | NC           | N          | NC              |
| 13         | NC           | P          | NC              |
| 14         | NC           | R          | NC              |
| 15         | NC           | S          | NC              |

## Theory of Operation

### Signal Input Conditioning

The thermocouple output voltage, which is proportional to the temperature being measured, is applied to the thermocouple input jack. The cold junction compensation circuit monitors the ambient temperature and generates a correctional voltage that offsets ambient temperature variations at the thermocouple output. The temperature range of the instrument is determined by selected fixed amplifier gains.

### Analog-to-Digital Converter

The analog-to-digital conversion is accomplished by the dual-slope integration technique. The DC voltage from the signal input conditioning section is converted by the LSI circuitry to a digital value equal to the parameter (temperature) being measured.

### Readout

The readout section consists of the 3-1/2 digit, 7-segment, orange LED display that is directly driven by the A/D converter.

## Accessories

### Ordering Information

|                                      |       |
|--------------------------------------|-------|
| 1/8 DIN Panel Adapter                | 22992 |
| "U" Type Mounting Bracket            | 22991 |
| Thermocouple Probe                   | 00391 |
| 17' Thermocouple                     |       |
| Extension Wire<br>(Resistance = 10Ω) | 21234 |
| 34' Thermocouple                     |       |
| Extension Wire<br>(Resistance = 10Ω) | 21235 |

Please see the Accessory Section for full details on Mounting Hardware.

## Safety Symbols



The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury.



The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly adhered to could result in damage to or destruction of part or all of the instrument.

## Ordering Information

| Range   | Model 2871<br>120VAC |
|---------|----------------------|
| 200° F  | 24660                |
| 1200° F | 24661                |
| 200° C  | 24662                |
| 650° C  | 24663                |

### Other Temperature Devices

Simpson manufactures other styles and sizes of temperature devices:

\*Falcon F45 Series 1/8 DIN Indicators

\*Hawk HK35, HK45, HK235 1/8 DIN

Controllers

M240 Controllers

\*Isolated Transmitters

\*Non-Isolated Transmitters

\*Thermocouples