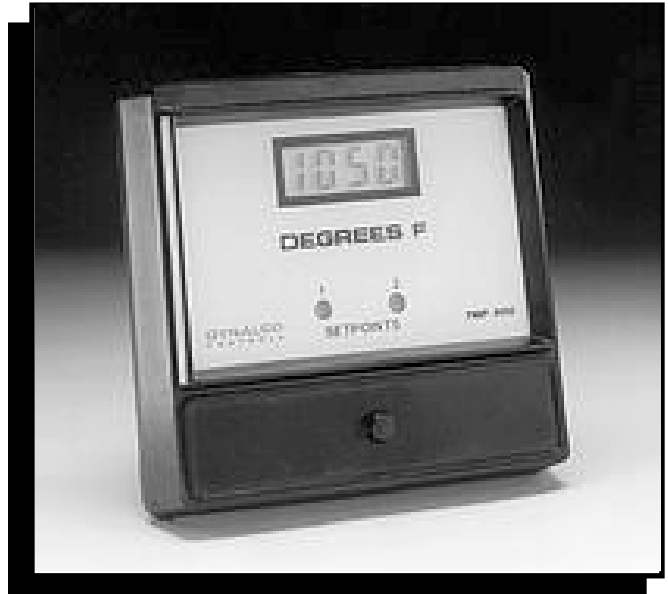


# TMP-900

# DYNALCO CONTROLS

## Digital Temperature Indicator with Two Setpoints

**2-Year  
Warranty**



### FUNCTION:

Digital display of temperature with two alarm setpoints. Converts standard thermocouple and RTD inputs into accurate digital temperature displays. Two independent relays transfer when preset temperature limits are exceeded.

### USAGE

Surveillance and/or control of temperature within specified limits. Alarm and control of over-temperature and under-temperature. Protection of engines from costly failure. Measure the temperature of bearings, power cylinders, turbocharger, compressor discharge, coolant, lubricant, valves, etc. Use in process control, instrumentation, machine tool, textile food processing and other industries.

### SIGNAL SOURCES

Thermocouples, RTDs, thermistor probes, etc.

### FEATURES

- Rugged, lightweight, 1.0 lb (0.45 kgs) maximum
- No meter movement; all solid-state

- Two built-in alarm relays
- Gasketed; splash resistant
- Large (0.5" high characters) LCD display; contrast ratio increases with high ambient light. Ideal for outdoor installation
- Readout with 1° resolution
- No compensation of lead lengths or lead resistances required; use inexpensive small-gauge thermocouple extension wire to save money and space
- Powered from 115 Vac, 24 Vdc, or 12 Vdc
- Front panel LED setpoint alarm lights
- Built-in test signal to verify alarm setting and system checkout
- Flexible: can be programmed for relay logic, latching option, and alarm indication
- High immunity to electrical noise and supply spikes

## SPECIFICATIONS

**Display:** 3½-digit, 0.5" high LCD. Range: -1999 to +1999 in increments of 1. Readout update rate is once per second.

**Sensor:** Ungrounded thermocouple; integral cold junction compensation. Thermocouple extension wire resistance of up to 100 ohms introduces less than 1° error. Burned out thermocouple or open RTD indicated by a number "1" in the thousands column with all other digits blanked.

With RTDs use heavy copper extension leads to minimize error, i.e. AWG 16 for up to 50 feet, AWG 14 to 100 feet.

**Ambient Temperature:** 0°F to +165°F (-18°C to +74°C) operating; 0.25% maximum change on readout or setpoint with 50°F (28°C) change in ambient, -40°F to +180°F (-40°C to +82°C) storage.

**Power Requirement:** 115 Vac  $\pm 10\%$ , 50/60 Hz and/or any supply voltage from 9 Vdc and 30 Vdc. Maximum of 1.5 watts (ac); 60 mA (dc).

**Weight:** 1.0 lb (0.45 kg) maximum

**Setpoints:** Adjustable with 20-turn infinite resolution potentiometers located under the snap-on bottom front cover. Relay contact rating of 5 amperes at 29 Vdc or 115 Vac resistive. Nominal hysteresis (differential between pull-in and dropout) of 0.25% of full scale. Relays energize at temperatures *above* the setpoint when not otherwise specified. For each setpoint, solder jumpers on the back

permit independent programming of:

- 1a. Alarm [LED turns on] for overtemperature
- b. Alarm [LED turns on] for undertemperature (*Alarm must have a positive value.*)
- 2a. Energize relay on alarm
- b. De-energize relay on alarm
- 3a. Automatic reset [non-latching]
- b. Latch on alarm.

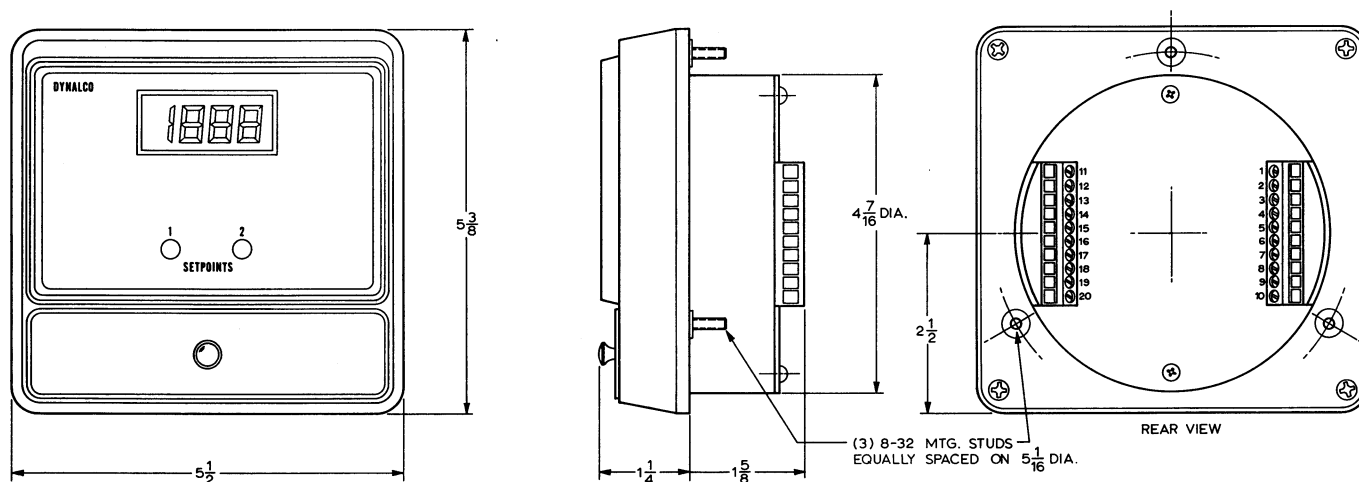
Relays set up in the latching mode require momentary jumpering of terminals 12 and 11 for reset. Terminal 11 is common to the power supply common. Relay response time is 100 milliseconds, nominal.

**Proportional Output:** 0-1 mAdc over zero degrees to full-scale positive temperature at terminals 9(+) and 10(-) calibrated into a 40 ohm remote linearized meter. A remote meter calibration potentiometer is accessible under the snap-on bottom front cover. Terminal 10 is common to dc supply terminal 5.

**Integral Test Signal, Verify:** Pressing the Verify push-button introduces a test signal adjustable by the Verify potentiometer. This signal simulates an actual temperature signal and allows easy adjustment of the setpoint values.

**Manual Controls:** Accessible beneath the snap-on bottom front cover are: setpoint adjust controls, test/verify controls, remote meter adjust potentiometer, and the zero span calibration trimmers.

## OUTLINE DRAWING



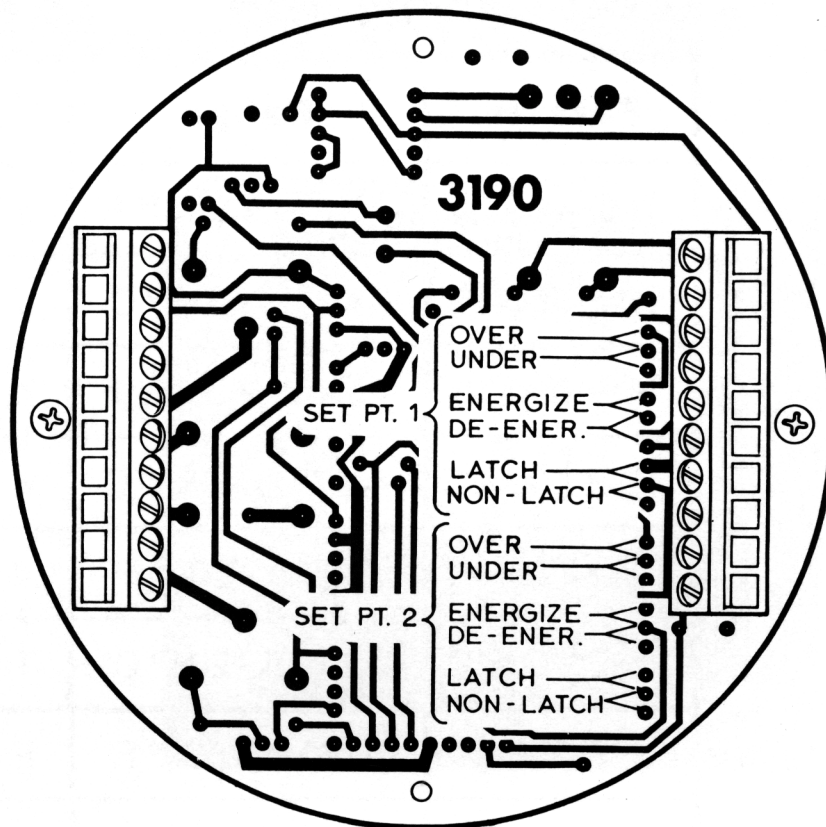
# ELECTRICAL CONNECTIONS:

1 — Earth ground	
2 — Hot	115 VAC,
3 — Neutral	50/60 Hz
4 — +	
5 — —	9 to 30 VDC
7 — +	
8 — —	Signal input*
9 — +	
10 — —	Remote meter, 0-1 MA
11 — Common	Proportional output
12 — Reset	Reset terminals
15 — N.O.	(Latching mode only)
16 — C	
17 — N.C.	Relay #1 Contacts
18 — N.O.	
19 — C	
20 — N.C.	Relay #2 Contacts

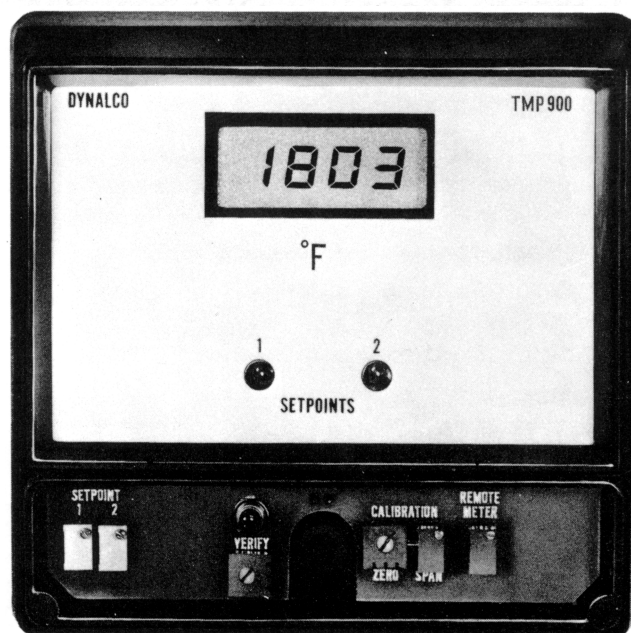
\*(a) Route power line and relay connections separate from signal, meter and reset lines.

(b) For 3-wire RTD's connect single wire to 7, connect the other two wires to 8 and 6.

## ALARM PROGRAMMING JUMPERS



REAR VIEW OF UNIT  
WITH COVER REMOVED



FRONT VIEW OF UNIT WITH COVER REMOVED

PART NUMBERS & RANGES		
Model	Range	Sensor
TMP-900-11	–50° to +1500°F	J {iron–constantan}
TMP-900-12	–45° to +815°C	J {iron–constantan}
TMP-900-13	–50° to +1800°F	K {chromel–alumel}
TMP-900-14	–45° to +980°C	K {chromel–alumel}
TMP-900-15	0° to +500°F	T {copper–constantan}
TMP-900-16	–20° to +260°C	T {copper–constantan}
TMP-900-17	0° to +500°F	E {chromel–constantan}
TMP-900-18	–20° to +260°C	E {chromel–constantan}
TMP-900-19	–300° to +800°F	100 ohm Platinum RTD
TMP-900-20	–185° to +425°C	100 ohm Platinum RTD

## HOW TO ORDER

1. Specify part number from the table above, and:

2. Specify for each setpoint:

- a) Over-temperature or under-temperature alarm  
(Alarm must have a positive value.)
- b) Relay energizes or de-energizes on alarm
- c) Automatic reset or latching on alarm
- d) Any desired initial factory setting of setpoint

### EXAMPLE:

I. TMP-900-11

II. Setpoint 1:

- ◆ Over-temperature function
- ◆ Relay energizes on alarm
- ◆ Automatic reset
- ◆ Set at 1100°F

III. Setpoint 2:

- ◆ Over-temperature function
- ◆ Relay energizes and latches on alarm
- ◆ Set to 1200°F



TMP-900 is a trademark of Dynalco Controls  
DYNALCO CONTROLS RESERVES THE RIGHT TO CHANGE THESE SPECIFICATIONS WITHOUT NOTICE.  
FOR COMPLETE SPECIFICATION INFORMATION, CONTACT A DYNALCO REPRESENTATIVE.