



INSTRUCTION MANUAL

Ogden 1/8 DIN Solid State Temperature Controller - Relay Output - Solid State Output - for Heating- Model Series: ETR-805



The ETR-805 features digital set point adjustment and digital indication of the process temperature. The 1/8 DIN size and plastic case with easy mounting method requires minimal space. The front panel reset adjustment allows easy access for precise process control. Plug-in construction provides quick replacement. The ETR-805 can be equipped with an auxiliary output for alarm or limit.

All temperature controls in this series are made to fit into panel cut-outs which measure 1²⁵/₃₂" x 3⁵/₁₆". A minimum of 3" in depth is required for electrical clearances of rear terminal connections. The following specifications are common to all models.

INPUT

| | |
|----------------------------|---|
| Thermocouple (T/C) | Type J,K. Specified on Control Label. |
| RTD | PT 100 ohm DIN ($\alpha = .00385$) or JIS ($\alpha = .003916$) Three-Wire |
| Cold Junction Compensation | Automatic |
| Input Break Protection | Built-in, upscale on open sensor and output off. |

| | |
|------------------------------|--|
| Input Impedance | 10M ohm. |
| Common Mode Rejection (CMR) | CMRR 120 dB, Min |
| Normal Model Rejection (NMR) | NMRR 60 dB, Min. (60Hz) |
| CONTROL OUTPUT | |
| Relay-Heating | SPDT relay, 3 amps maximum resistive load at 120V, 240VAC, or 24VDC. |
| Optional: | |
| 3-32VDC | Output to solid state relay. |
| 4-20mA | Output to SCR. |
| Relay-Alarm | SPST relay, 2 amps to maximum resistive load at 120V or 240VAC. |

CONTROL MODES

| | |
|--------------|---|
| On-Off | Differential 0.5% of full-scale range. |
| Proportional | Proportional Band 2.5% of range, fixed. Proportional Cycle time 20 sec. on Relay Controls, 1 sec. on SSR Controls |

INDICATION

Output "On" LED lamp
"Red"—heater on.

SETPOINT

Resolution Least significant digit.
Accuracy $\pm 0.1\%$ of full scale range.
Repeatability $\pm 0.1\%$ of full scale range.
Manual Reset 4% of full scale range, adjustable.

POWER

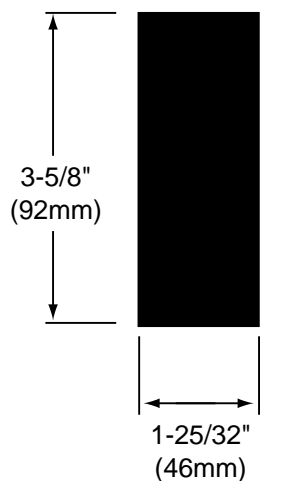
Rating 90-264VAC, 50/60Hz.
24VAC/DC available on special order.
Consumption Less than 3VA.

ENVIRONMENTAL & PHYSICAL

Operating Temperature 10° to 125°F, (-12 to 52°C).
Humidity 0 to 90% RH, non-condensing.
Insulation 20M ohm Min. (5000VDC).
Breakdown 2000VAC, 50/60Hz, 1 minute.
Vibration 10 - 55Hz, Amplitude 1.0mm.
Shock 660 ft./S² (20g).
Weight 8 oz. (227 grams)

DIMENSIONS

H 3 $\frac{3}{4}$ " (96MM)
W 1 $\frac{7}{8}$ " (48MM)
D 3 $\frac{1}{8}$ " (80MM)
Depth behind panel 2 $\frac{9}{16}$ " (65mm)
Panel cutout 1 $\frac{25}{32}$ " x 3 $\frac{5}{8}$ " (46 x 92mm).
DIN Case Plastic, full plug-in construction with screw terminals on rear, adjustable brackets for panel mounting.



PANEL CUTOUT

MOUNTING

When mounting the instrument, it is important the control remains within the ambient temperature range of 10 to 125°F. Mounting it in position is permissible. After inserting the control into the panel secure it with the two mounting brackets provided with each unit. Use light to moderate pressure.

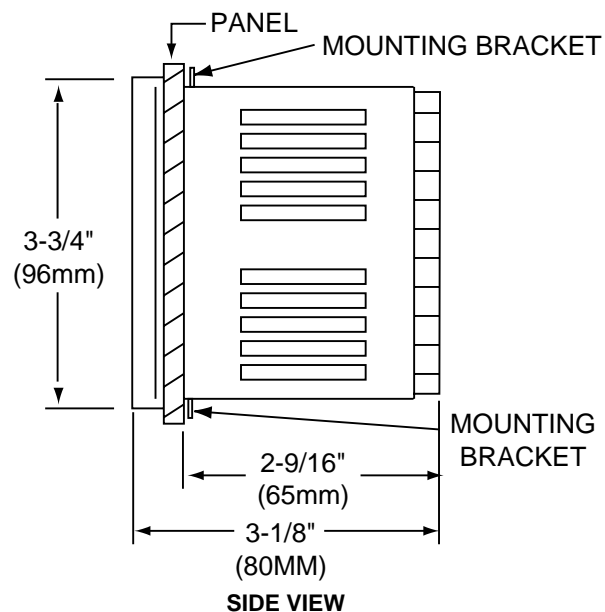
WIRING

All wiring should conform to local and National electrical codes:

- Diagram 1: Relay output. An external magnetic contactor must be used if the heater load exceeds 3 amps.
- Diagram 2: Relay output with 3-pole magnetic contactor.
- Diagram 3: Relay output with alarm.
- Diagram 4: Relay output with 3-pole magnetic contactor and alarm.
- Diagram 5: SSR (solid-state relay) output. This diagram can also be used for controls with voltage or current output such as 4-20ma.
- Diagram 6: SSR (solid-state relay) output with alarm. This diagram can also be used for controls with voltage or current output such as 4-20ma.

NOTE:

The use of motor starters in place of magnetic contactors should be avoided. They have very large inductive loads that can damage the controller's relay.



When wiring the thermocouple, check the thermocouple and extension wire (compensating cable) to make sure they conform to the appropriate thermocouple type specified by the instrument. Extension wires must be the same alloy and polarity as the thermocouple. The total lead resistance should not exceed 100 ohms for accurate measurements. One hundred ohms of lead resistance will introduce a 1 degree F (0.5 degree C) error.

For wiring 3 wire RTD (Resistance Temperature Detectors), all leads connecting the RTD to the controller must be the same gauge and composition to assure effective lead resistance compensation.

WARNING!



RISK OF ELECTRIC SHOCK - Dangerous and potentially fatal voltages are present when working on this equipment. Before installation or beginning any troubleshooting procedures, the electric power to this equipment must be disconnected and locked out as described by OSHA Standards. Units suspected of being faulty must be removed and returned to Ogden for inspection and/or repair. They contain no user serviceable components.

WARNING!



To help minimize the possibility of fire or shock hazards, do not expose this instrument to rain or excessive moisture. This control is not to be used in hazardous locations as defined in Articles 500 and 505 of the National Electric Code.

WARNING!



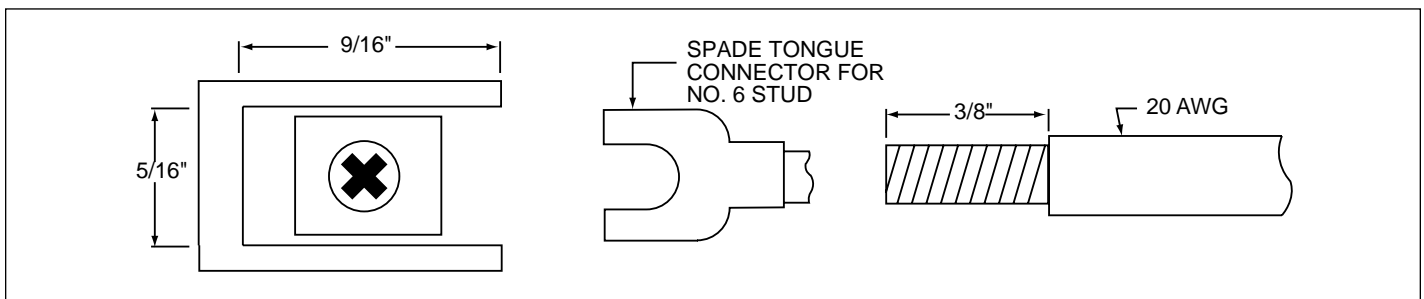
Do not use this instrument in areas subject to hazardous conditions such as excessive shock, vibration, dirt, moisture, corrosive gases or oil. The ambient temperature of the areas should not exceed the maximum rating.

Wiring Precautions:

- Before wiring, verify the label for correct model number and options. Switch off the power when checking.
- Care must be taken to ensure that maximum voltage ratings are not exceeded.
- It is recommended that power to these instruments be protected by fuses or circuit breakers rated at the minimum value possible.
- All units should be installed inside a suitably grounded metal enclosure to prevent live parts being accessible to human hands and metal tools.
- All wiring must conform to appropriate standards of good practice and local and National codes and regulations. Wiring must be suitable for voltage, current and temperature ratings of the system.
- Both solderless terminals or “stripped” leads as specified below can be used for power leads. Only “stripped” leads should be used for thermocouple connections to prevent compensation and resistance errors.
- Take care not to over-tighten the terminal screws.
- Unused control terminals should not be used as jumper points as they may be internally connected, causing damage to the unit.

GENERAL OPERATION

Adjust the digital set point to the desired temperature. Upon energizing, the red pilot light labeled “On” will shine. This indicates that the system is calling for heat. As the process temperature approaches the set point, the control will cycle on and off. The actual process temperature, as measured at the sensor, will be indicated on the red control display.



WARNING!

Failure of devices, such as the thermocouple-RTD sensor, heater output relay or temperature control can result in severe damage to a product while in process, melting of the heater or a damaging fire. An over-temperature protection device must be installed in your process that will remove all power from the heating circuit if the above failure occurs. We recommend that this device be classified as a safety control and carry U.L., CSA or FM listing or certification. Failure to install high-limit temperature control protection where a potential hazard exists, could result in damage to equipment and property, and severe injury to personnel.

MANUAL RESET ADJUSTMENT

This adjustment is located on the front of the control. When the process stabilizes, approximately one half hour after adjusting set point, an adjustment in "reset" may also be necessary. Start with the reset adjustment pointing to zero. If the temperature indication stabilizes above the set point, then adjust the reset to the "minus" side. If the temperature indication stabilizes below the set point temperature, then adjust the reset to the "plus" side. By turning this adjustment once or more, the indicated temperature should eventually match the set point temperature. It is very important to wait approximately 15 minutes after each adjustment to allow the system time to stabilize.

ALARM OPERATION (OPTIONAL)

The ETR-805 can be equipped with a form-A relay than can be used for a deviation alarm. This is called a deviation alarm because if the control set point is changed then the alarm set point keeps the same deviation from the control set point. This relay is rated for a maximum load of 2 amps, 240 volts. The alarm set point adjustment is located on the front of the control. The alarm is adjustable from 0-10 percent of the range of the control (0-99 degrees) from the set point in a positive or negative direction. If the alarm adjustment is set to 0 then the alarm relay would energize exactly at the control set point.

CALIBRATION INSTRUCTIONS

Calibration of the ETR-805 is accomplished using the four potentiometers located on the bottom of the left-hand circuit board. The control is opened by releasing the latches located on the top and bottom of the case. The control should be allowed to warm up for at least 1/2 hour before checking the calibration.

The purpose of the potentiometers is as follows:

- VR1Low scale calibration.
- VR4High scale calibration.
- VR2Low scale switching point.
- VR3High scale switching point.

The "reset" adjustment must be set to 0 before calibration. VR1 and VR4 have a slight effect on each other so you should calibrate low scale and high scale at least three times each.





CAUTION
SHOCK
HAZARD

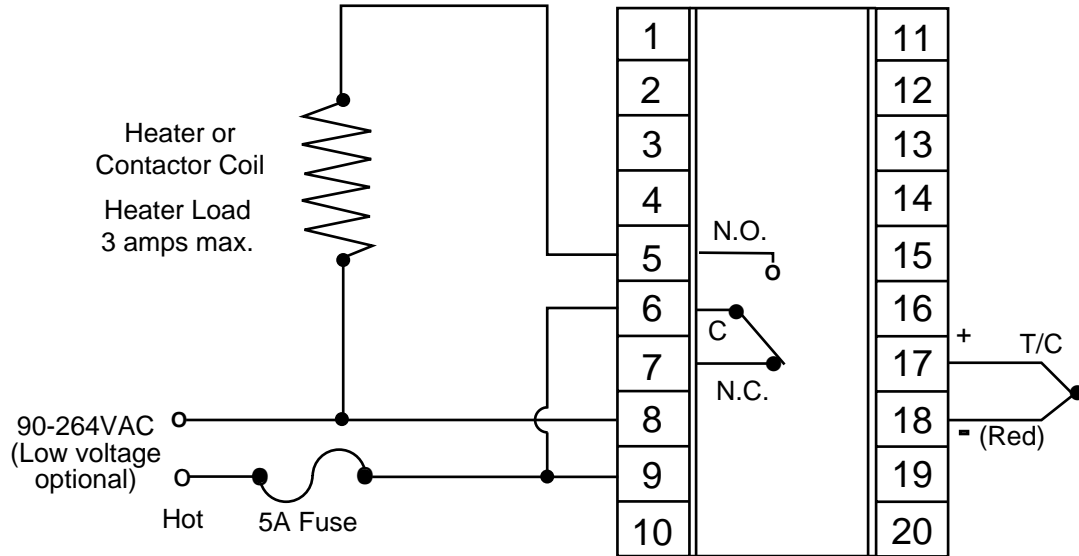


DIAGRAM ONE
RELAY OUTPUT
90-264VAC
POWER 50/60HZ

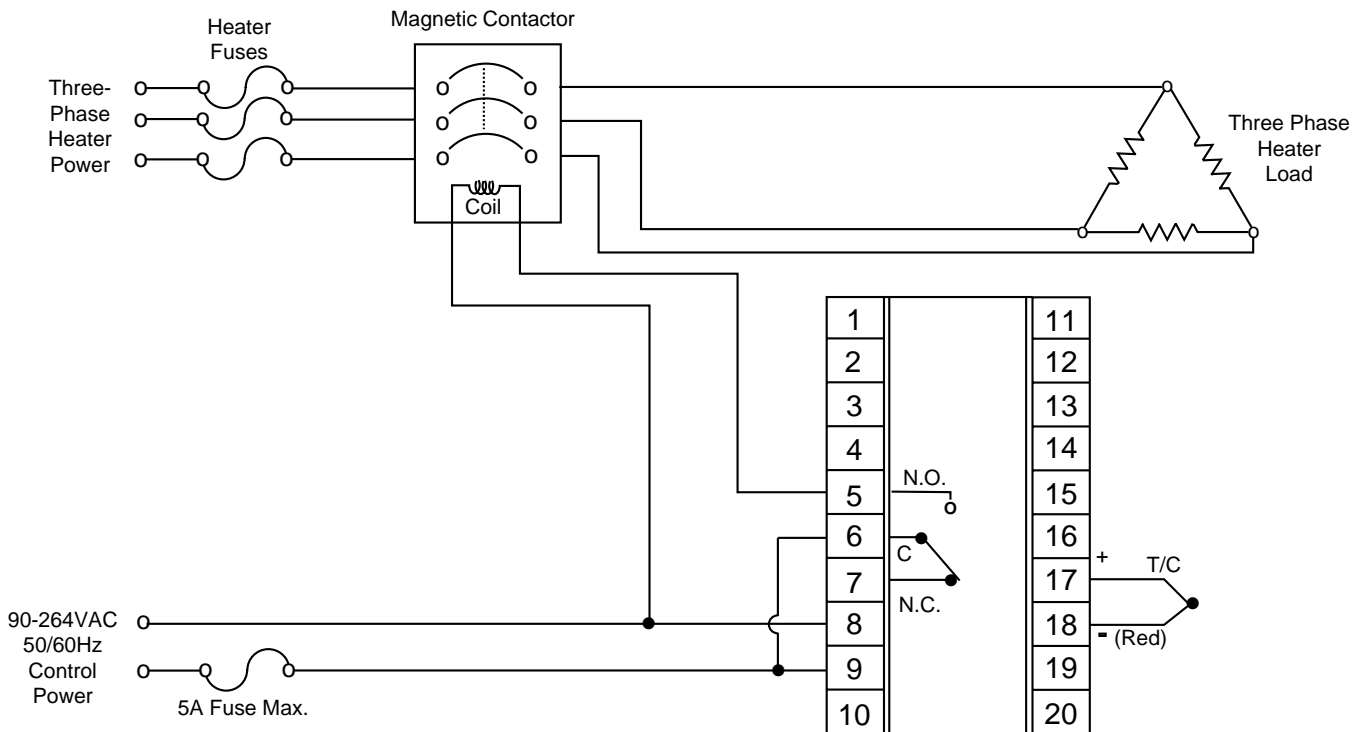
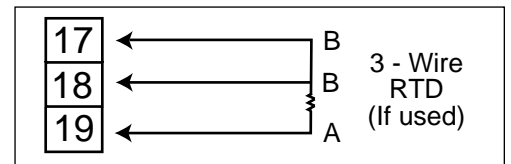


DIAGRAM TWO
RELAY OUTPUT WITH
MAGNETIC CONTACTOR
90-264VAC
POWER 50/60HZ

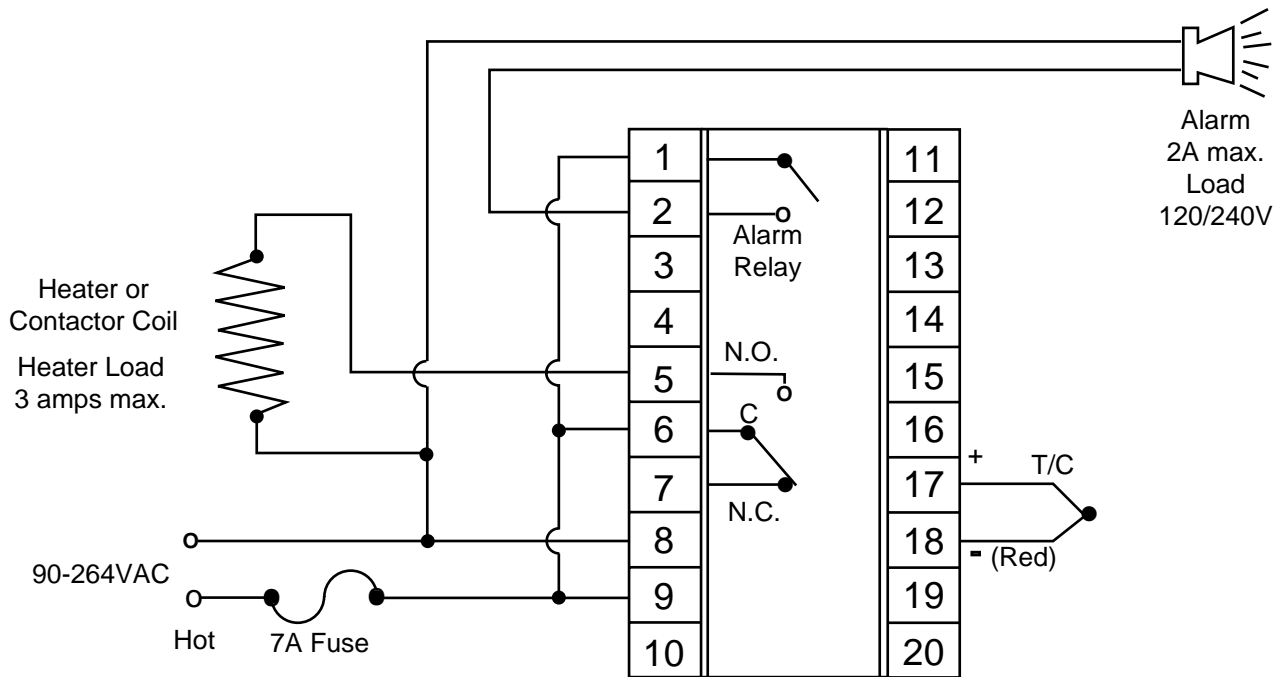


DIAGRAM THREE
 RELAY OUTPUT WITH
 ALARM
 90-264VAC POWER

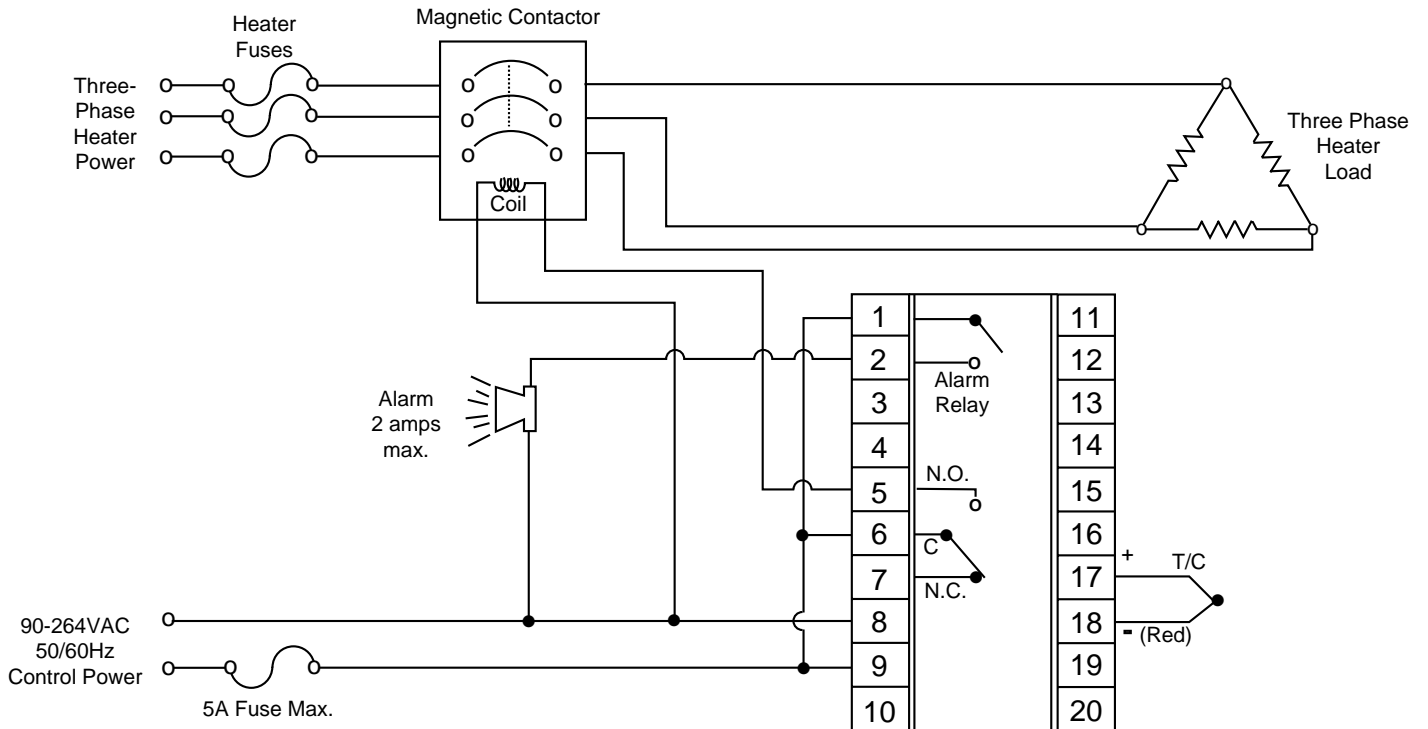


DIAGRAM FOUR
 RELAY OUTPUT WITH
 MAGNETIC CONTACTOR AND
 ALARM
 90-264VAC POWER

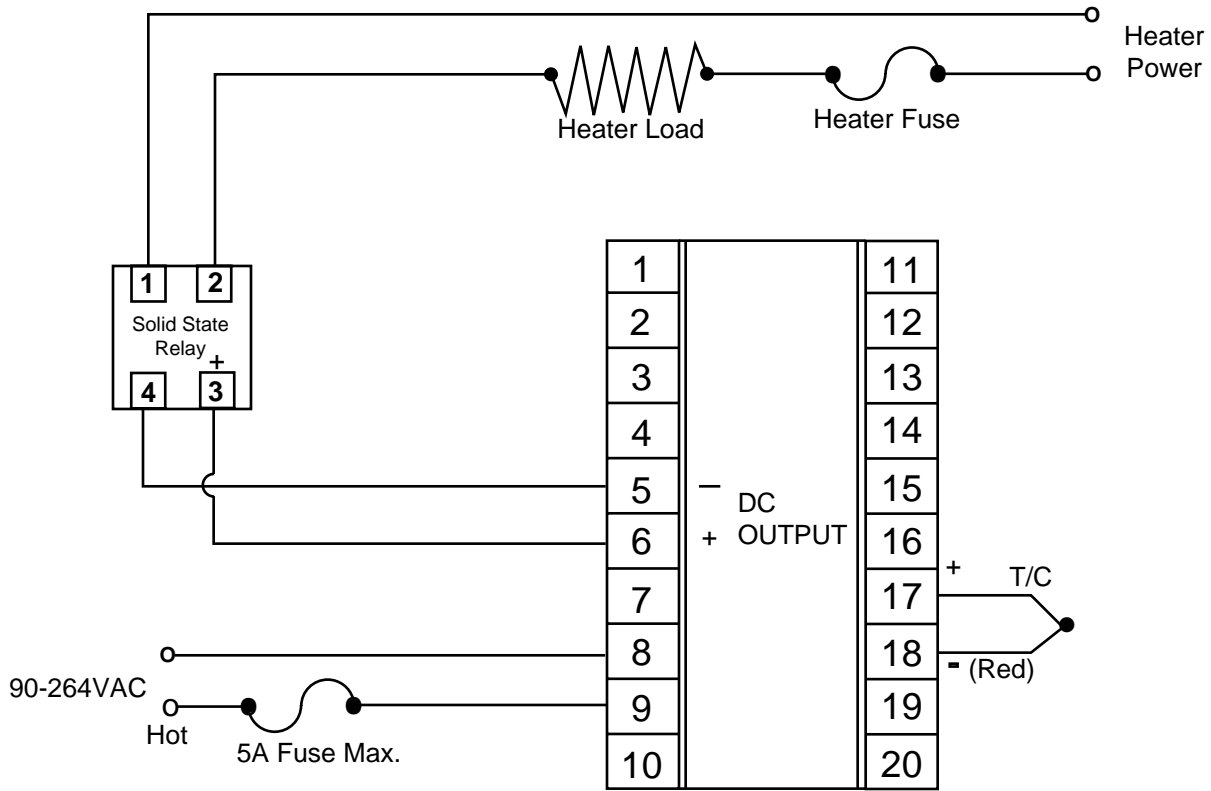


DIAGRAM FIVE
SSR OUTPUT
90-264VAC POWER

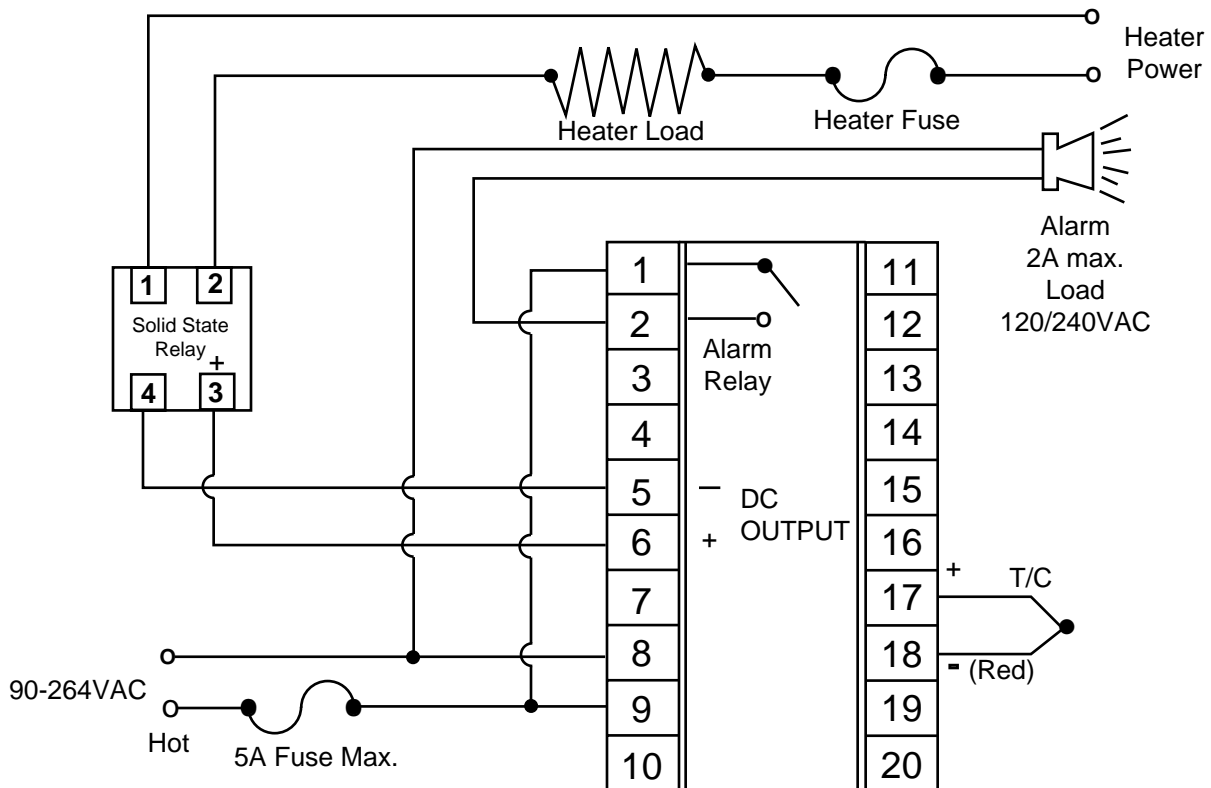


DIAGRAM SIX
SSR OUTPUT
WITH ALARM
90-264VAC POWER

TROUBLESHOOTING

WARNING THIS PROCEDURE REQUIRES ACCESS TO THE CIRCUITRY OF A LIVE POWER UNIT. DANGEROUS ACCIDENTAL CONTACT WITH LINE VOLTAGE IS POSSIBLE. ONLY QUALIFIED PERSONNEL ARE TO PERFORM THESE PROCEDURES. POTENTIALLY LETHAL VOLTAGES ARE PRESENT.

Experience has proven that many control problems are not caused by a defective instrument. See chart below for some of the other common causes of failures:

Line wires are improperly connected.
No voltage between line terminals.
Incorrect voltage between line terminals.
Connections to terminals are open, missing or loose.
Thermocouple is open at tip.
Thermocouple lead is broken.
Shorted thermocouple leads.
Short across terminals.

Open or shorted heater circuit.
Open coil in external contactor.
Burned out line fuses.
Burned out relay inside control.
Defective solid-state relays.
Defective line switches.
Burned out contactor.
Defective circuit breakers.

If the points listed on the chart have been checked and the controller does not function, it is suggested that the instrument be returned for inspection.

Do not attempt to make repairs. Also, it is advisable to use adequate packing materials to prevent damage in shipment.

Return control to:
OGDEN MANUFACTURING COMPANY
ATTN: Repair Department
64 W. SEEGER ROAD
ARLINGTON HEIGHTS, IL 60005



64 West Seegers Road
Arlington Heights, IL 60005
(847) 593-8050 • Fax: (847) 593-8062
www.ogdenmfg.com • sales@ogdenmfg.com

© Ogden Manufacturing Co. 2000
OGDEN and ETR are
Registered Trademarks of
Ogden Manufacturing Co.
MARCA REGISTRADA