GENERAL

Model Series 380AT Alarm Modules accept a thermocouple input signal and provide relay actuation at a pre-set input signal level. The alarm module can be supplied with up to two output relays with separate trip-point and deadband adjustments. The trip-point adjustments have very high resolution by utilizing 22-turn potentiometers. Deadband adjustments are provided by 15-turn potentiometers. The relay outputs are single pole double throw contacts rated at 2A (117 VAC or 28V dc) with a resistive load. Alarm modules using hermetically sealed relays are available.

Two field changeable input ranges (narrow or wide span) provide large range capabilities with increased resolution. The input circuit is electrically isolated from the power supply allowing the input to operate at common mode voltages of up to 100V dc. Input filtering is provided to minimize the effects of noise on the input signal.

The thermocouple alarm module has automatic cold junction compensation over the entire ambient temperature range. Upscale or downscale drive on thermocouple break is field selectable by cutting a jumper on the circuit board.

Relay actuation can be converted from "normal" acting (relay energized above trip-point) to "reverse" acting (relay energized below trip-point) by cutting a jumper on the circuit board. This provides selectable fail safe action.

An L.E.D. is provided at the front of the circuit card (one for each relay) to provide visual indication when an output relay is energized.
MODEL DESIGNATION

Basic Series Designation

380A T1 J2

Designates Thermocouple Alarm Module

Indicates Type of Thermocouple

J - Iron/Constantan
K - Chromel/Alumel
T - Copper/Constantan
S - Plat./Plat. Rhod. (Types R and S)
E - Chromal/Constantan

Indicates Type of Output Relay

1 - Standard Relay (SPDT, 2A)
2 - Hermetically Sealed Relay (SPDT, 3A)

Indicates Number of Trip-Points

1 - Single Trip-Point (1 Relay)
2 - Dual Trip-Points (2 Relays)

SPECIFICATIONS

Input Range:

T. C. Type  Narrow Span           Wide Span

J   -85°C to +460°C       -210°C to +1200°C
K   -120°C to +620°C       -270°C to +1373°C
T   -130°C to +250°C       -270°C to +400°C
S & R  -50°C to +1000°C    -50°C to +1760°C
E   -100°C to +485°C       -270°C to +100°C

Input Impedance: 200,000 Ohms (min)

Input Isolation: Up to 100V dc

Repeatability: ±0.1% of span

Noise Rejection:

Common Mode: 140 db at 60 Hz
Normal Mode: 40 db at 60 Hz

Trip Adjustments: 22-turn potentiometers

Deadband: Adjustable; 20 μV to 5 mV

Response Time: 300 milliseconds

Output Relay(s):

Standard: SPDT, contacts rated at 2A, 117 VAC or
28V dc, resistive load.
Hermetically Sealed: SPDT, contacts rated at 3A,
117 VAC or 28V dc, resistive load.

INSTALLATION

Using the Card Cage Enclosure Instructions as a reference (Service Instruction
SD3801), set the keys as follows:
If the alarm module is not factory calibrated, refer to the CALIBRATION section of this instruction. If the module is factory calibrated, insert the module into the proper slot in the card cage enclosure and make the electrical connections shown in the connection diagram.

CALIBRATION

1. Determine which trip mode is required for your application, "normal" or "reverse" acting. "Normal" refers to relay energized when input signal is above trip point (low fail-safe). "Reverse" refers to relay energized when input signal is below the trip point (high fail-safe). Refer to jumper location drawing and arrange as required.

2. Determine which gain mode is required in your application. The "narrow" and "wide" input span ranges are listed for each model in the SPECIFICATIONS section. The "narrow" span gives the best trip point resolution. If your trip point falls within the "narrow" range, its use is recommended. Refer to jumper location drawing and arrange as required.

3. Determine if up-scale or down-scale break indication is required. Units are normally supplied with up-scale break indication. If down-scale break indication is required, cut jumper J2 as shown on drawing.

4. Set deadband (DB) control to full CCW, then turn two (2) turns clockwise. This gives a deadband of about 20 µV.

5. Connect a dc millivolt source (to simulate a thermocouple input) to the input terminals and adjust it to the value you desire for a trip-point. Refer to the connection diagram for terminal identification.

6. Adjust the TRIP potentiometer until the relay operates. The associated LED will come on (when trip point is below input signal for "normal" acting, or when trip point is above input signal for "reverse" acting). Rock adjustment screw CW and CCW and get as close as possible to actual trip point.

7. If increased deadband is required, increase DB control. Vary input control and determine input values for drop-out and pull-in of relay. The difference of these values is the amount of deadband. Adjust deadband control and vary input until desired deadband is obtained.

8. Reset input to desired trip value and readjust trip for desired operating point. NOTE: If the deadband control is changed, the trip control should be readjusted.

MAINTENANCE

These instruments are solid state and require no maintenance on a regular basis, except for annual cleaning, blowing out dirt, and verifying calibration. If your alarm is not operating properly, we suggest removing it and giving a full bench check out. We find most problems are in the field wiring or other circuits, not in the alarm itself. If the problem is traced to the unit itself, conventional electronic troubleshooting methods suffice.
1. DPDT units have one relay only.
2. Relay contact load limitations are listed under "OUTPUT" of the specifications section.
3. Contacts shown with output relay de-energized. Standard units are de-energized below "trip point", and reverse acting (R) units are de-energized above "trip point".

**CONNECTION DIAGRAM**