

## Model 21-40P - Field Diagnostics

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## Troubleshooting the Model 21-40P

THIS DOCUMENT DESCRIBES CONDITIONS WHICH CAN BE CORRECTED IN SHOP OR FIELD INSTALLATIONS. THOSE CONDITIONS ARE LISTED BY MAJOR INSTRUMENT FUNCTION OR FEATURE CATEGORIES WHICH ARE:

- (1) INPUT VOLTAGE
- (2) TEMPERATURE MEASURE/INDICATION
- (3) SET-POINT ADJUSTMENTS
- (4) FAIL-SAFE FEATURES

FOR ALL OTHER CONDITIONS CALL CIMCO AT 724-528-9559 OR USE CIMCO FAX NUMBER 724-528-1108.

SYMPTOM	POSSIBLE CAUSE	RECOMMENDED ACTION
<b>(1) INPUT VOLTAGE</b>		
NO STATUS LIGHTS	NO INPUT POWER	CHECK INPUT VOLTAGE, FUSES, AND BREAKERS
ABNORMAL DISPLAY	LOW INPUT VOLTAGE	CHECK INPUT VOLTAGE
TEMPERATURE INDICATION IS TOO LOW	INPUT VOLTAGE LESS THAN 85 VAC OR GREATER THAN 264 VAC	MEASURE INPUT VOLTAGE
NO FAN POWER OUTPUT BUT INSTRUMENT OPERATES	BAD FAN FUSE	CONNECT POWER TO TERMINALS T9 AND T10; CHECK FAN FUSE
RELAYS ARE NOISY	LOW INPUT VOLTAGE	MEASURE INPUT VOLTAGE
ALARM AND/OR FANS ON AT ALL TIMES	LOW INPUT VOLTAGE	MEASURE INPUT VOLTAGE
<b>(2) MEASUREMENT/INDICATION FOR TYPE E THERMOCOUPLES</b>		
ZERO DEGREE C ON DISPLAY AND IS FLASHING	OPEN THERMOCOUPLE	CHECK THERMOCOUPLE CONNECTIONS AND CONTINUITY OF THERMOCOUPLES
ABNORMAL DISPLAY	NOT USING TYPE E THERMOCOUPLE	CONFIRM PURPLE AND RED T/C LEADS.
TEMPERATURE INDICATION IS WRONG	NOT USING TYPE E THERMOCOUPLE	CONFIRM PURPLE AND RED T/C LEADS.
	THERMOCOUPLE CONNECTIONS ARE REVERSED	CONNECT RED T/C LEAD TO NEGATIVE TERMINAL
	CRIMPED CONNECTIONS ARE LOOSE	DO NOT USE CRIMPED CONNECTIONS
INTERMITTENT INDICATION	LOOSE T/C CONNECTIONS	TIGHTEN T/C CONNECTIONS
		RESET INSTRUMENT BY PRESSING, HOLD, AND RELEASE READ MAX. TEMP. AND FANS AUTO AND SILENCE LOCAL ALARM.
INSTRUMENT DOES NOT RESPOND TO CONTROL PANEL COMMANDS	SOFTWARE IS "LOCKED"	MUST RESET SOFTWARE OR REMOVE AND REPLACE INSTRUMENT FUSE.
<b>(3) SET-POINT ADJUSTMENTS</b>		

<i>SYMPTOM</i>	<i>POSSIBLE CAUSE</i>	<i>RECOMMENDED ACTION</i>
ALL SET-POINTS ARE FIELD PROGRAMMABLE. ACCESS CODE IS CONTROLLED BY THE TRANSFORMER MANUFACTURER.		
DO NOT CHANGE SET-POINTS WITHOUT APPROVAL OF TRANSFORMER MANUFACTURER.		
A SYSTEM TEST FEATURE IS INCLUDED ON MOST STANDARD MODELS.		
USE THIS TEST FEATURE TO EXAMINE THE SET-POINT ON AND OFF TEMPERATURES		
FANS, ALARM OR TRIP LIGHTS WILL NOT ENERGIZE	SET-POINTS ARE TOO HIGH	RESET SET-POINTS AUTO CHANGE TO DEFAULT SETTING
<b>(4) FAIL SAFE FEATURES</b>		
ALARM OR FAN SET-POINT RELAYS STAY ON.	LOW INPUT VOLTAGE	CHECK INPUT VOLTAGE
FANS AND ALARM STAY ON PLUS THREE ZEROES ON TEMPERATURE DISPLAY	OPEN THERMOCOUPLE	CHECK SENSOR CONNECTION AND RESISTANCE
TRIP LIGHT TURNS ON BUT TRIP RELAY DOES NOT ENERGIZE	OPEN THERMOCOUPLE	CHECK SENSOR CONNECTION AND RESISTANCE
INSTRUMENT WILL NOT ENERGIZE	INPUT VOLTAGE TOO LOW OR HIGH	CHECK INSTRUMENT FUSE
FAN RELAY WILL NOT ENERGIZE	OVERLOAD ON FAN RELAYS	CHECK FAN FUSE

## Fail Safe Features

1. Loss of power to instrument
  1. Alarm relay turns on.
  2. Fan relays turn on.
  3. Trip relay does not turn on.
2. Power supply brown-out
  1. Power supply supervisor
  2. Automatic restart
3. Open temperature sensor
  1. Alarm relay turns on.
  2. Local alarm turns on.
  3. Alarm on status LED turns on.
  4. Fan relays turn on.
  5. Fan on status LED turns on.
  6. Digital display blinks.
  7. Phase LED associated with open sensor blinks.
  8. Press phase selector with blinking LED and digital display will indicate three zeroes.
  9. Functional sensors continue with normal operation.
  10. Trip relay is managed by operating sensors
4. Trip relay with open temperature sensor:
  1. Open temperature sensor does not energize trip relay.
  2. Trip relay will turn on if one or both of the other phase sensors indicate temperatures above the trip set-points.
5. Microcontroller failure
  1. Alarm relay turns on.
  2. Fan relays turn on.
  3. Power on led stays on.
6. On set-points are limited to
  1. Minimum set-point on is 50 C and
  2. Maximum set-point on is 230 C.
7. EE Prom failure instructions
  1. EE Prom remembers user selected set-points.
  2. If EE Prom fails, operating software will use:
    1. 190 Degrees C for Fans On
    2. 200 Degrees C for Alarm On
    3. 210 Degrees C for Trip On

## CONTROL DIAGRAM

