# PDF SCHEMATICS
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OIL PHASE FID ELECTROMETER SECTION OF AMP BOARD

This circuitry amplifies the signal from the collector prior to digitization by the A/D board.

NOTE: MODEL 310 STUDENT TCD G.C.s AND MODEL 110 STANDALONE DETECTORS DO NOT HAVE AN A/D BOARD. THESE MODELS REQUIRE ZERO POTS AND ATTENUATORS TO ADJUST THE DETECTOR OUTPUTS TO THEIR DESIRED LEVEL. SEE THE "ZERO POTS AND ATTENUATORS" PAGE IN THIS SECTION.

OIL PHASE HID ELECTROMETER SECTION OF AMP BOARD

This circuitry amplifies the signal from the collector prior to digitization by the A/D board.

NOTE: MODEL 310 STUDENT TCD G.C.s AND MODEL 110 STANDALONE DETECTORS DO NOT HAVE AN A/D BOARD. THESE MODELS REQUIRE ZERO POTS AND ATTENUATORS TO ADJUST THE DETECTOR OUTPUTS TO THEIR DESIRED LEVEL. SEE THE "ZERO POTS AND ATTENUATORS" PAGE IN THIS SECTION.
POWER SUPPLY SECTION OF AMP BOARD

POWER SUPPLY #2

FROM AC DISTRIBUTION BOARD OR TRANSFORMER PINS 6, 7 & 8
FROM AC DISTRIBUTION BOARD OR TRANSFORMER PINS 1 & 2
FROM AC DISTRIBUTION BOARD OR TRANSFORMER PINS 3, 4 & 5

BR1
BR2
BR3

28 VAC #2 GROUND # 2
28 VAC #2
28 VAC #1 GROUND
28 VAC #1

28 VAC #2 FLOATING GROUND
24 VAC BIAS

BRIDGE RECTIFIER BR805D
BRIDGE RECTIFIER BR805D
BRIDGE RECTIFIER BR805D

28 VAC #2
24 VAC BIAS
28 VAC #1

C10 1000 uF 50V
C12 1000 uF 50V
C17 1000 uF 50V

C11 0.1 uF
C13 10 uF 50V
C18 0.1 uF

C14 0.1 uF
C16 0.1 uF
C20 10 uF 50V
C21 0.1 uF

+12 V
-12 V

POWER SUPPLY #2 IS A +12 V AND -12 V SUPPLY BIASED 24 VOLTS ABOVE GROUND POTENTIAL BY VR3 OF THE BIAS POWER SUPPLY. THIS SUPPLY IS USED BY THE FID, PID, AND FPD DETECTOR AMPLIFIERS.

BIAS POWER SUPPLY

FROM AC DISTRIBUTION BOARD OR TRANSFORMER PINS 3, 4 & 5

VR1
VR2
VR3
VR4
VR5

7812 REG.
7812 REG.
7824 REG.
7812 REG.
7812 REG.

24 VOLT BIAS VOLTAGE
GROUND

THE BIAS POWER SUPPLY MAINTAINS A 24 VOLT DC POTENTIAL BETWEEN GROUND #1 AND GROUND #2.

POWER SUPPLY #1

28 VAC #2
28 VAC #2
28 VAC #1

+12 V
-12 V

POWER SUPPLY #1 IS THE PRIMARY POWER SOURCE FOR ALL FUNCTIONS OF THE AMP BOARD AND ALSO PROVIDES +12 V AND -12 V TO THE A/D BOARD. ONLY THE TCD CIRCUIT REQUIRES AN ADDITIONAL AC VOLTAGE INPUT. SEE PAGE 2.

AMPLIFIER BOARD LAYOUT

CHASSIS GROUND 28 VAC #1 GROUND
NOTE: MODEL 310 STUDENT TCD GC'S AND MODEL 110 STANDALONE DETECTORS REQUIRE ZERO POTS AND ATTENUATORS TO ADJUST THE DETECTOR OUTPUTS TO THEIR DESIRED LEVEL. SEE THE "ZERO POTS AND ATTENUATORS" PAGE IN THIS SECTION.
FID, NPD, HID, TID
ELECTROMETER SECTION OF AMP BOARD

THIS CIRCUITRY AMPLIFIES THE SIGNAL FROM THE COLLECTOR PRIOR TO DIGITIZATION BY THE A/D BOARD.

NOTE: MODEL 310 STUDENT TCD G.C.s AND MODEL 110 STANDALONE DETECTORS DO NOT HAVE AN A/D BOARD; THESE MODELS REQUIRE ZERO POTS AND ATTENUATORS TO ADJUST THE DETECTOR OUTPUTS TO THEIR DESIRED LEVEL. SEE THE "ZERO POTS AND ATTENUATORS" PAGE IN THIS SECTION.
AMP-F SCHEMATIC

Page 5 of 7

Filename: Amp-f5.tcw
Date: 12/20/97 By: R. Fenske
Rev. Date: 04/11/12 By: M. Roseberry

**PID ELECTROMETER SECTION OF AMP BOARD**

This circuitry amplifies the signal from the PID collector prior to digitization by the A/D board.

Note: Model 310 student TCD G.C.s and model 110 standalone detectors do not have an A/D board. These models require zero pots and attenuators to adjust the detector outputs to their desired level. See the "Zero Pots and Attenuators" page in this section.

**FPD ELECTROMETER SECTION OF AMP BOARD**

This circuitry amplifies the signal from the FPD collector prior to digitization by the A/D board.

Note: Model 310 student TCD G.C.s and model 110 standalone detectors do not have an A/D board. These models require zero pots and attenuators to adjust the detector outputs to their desired level. See the "Zero Pots and Attenuators" page in this section.
TCD POT AND ATTENUATOR

CHASSIS MOUNTED TCD CELL
FROM HEAT BOARD

TO HEAT BOARD

TCID: 2K POT
ALL OTHERS: 20K POT

TCD POT AND ATTENUATOR

ELECTRICAL CONNECTIONS:
- BLACK to CHASSIS
- GREEN to THERMO COUPLE
- BLUE to PHONE CABLE

OPTIONAL ZERO POT ASSEMBLY
USED TO ZERO EXTERNAL (NON-SRI) DATA SYSTEMS

ATTENUATOR ASSEMBLY
EQUIV. 2.7K

ATTENUATOR ASSEMBLY

YELLOW WIRE OF PHONE CABLE TO DISPLAY BD. TCD PROTECT "ACTUAL" (VOLTAGE TO GROUND ON RED FILAMENT)

ATTENUATOR ASSEMBLY

RESISTOR VALUES IN OHMS

ECD POT AND ATTENUATOR

ELIMINATE R15 (1M) AND C13 (0.1uF):
CHANGE R14 FROM 1M TO 1K:
ADD 1M FROM WIPER OF 20K POT

FID, PID, FPD, NPD, HID, TID POT AND ATTENUATOR

ELIMINATE R5 (1M) AND C6 (0.1uF):
CHANGE R4 FROM 499K TO 1K:
ADD 100K FROM WIPER OF 20K POT

INPUTS:
- +12V #1
- -12V #1
- 2K POT

OUTPUTS:
- SIGNAL -
- SIGNAL +

INPUTS:
- +12V #1
- -12V #1
- 20K POT

OUTPUTS:
- SIGNAL -
- SIGNAL +
RGD OPTION
USE PID, FID, OR FPD
SECTION OF AMP BOARD

NOTE: MODEL 310 STUDENT TCD G.C.C.4 AND MODEL 110 STANDALONE DETECTORS DO NOT HAVE AN A/D BOARD. THESE MODELS REQUIRE ZERO POTS AND ATTENUATORS TO ADJUST THE DETECTOR OUTPUTS TO THEIR DESIRED LEVEL. SEE THE "ZERO POTS AND ATTENUATORS" PAGE IN THIS SECTION.

REMITE THE 24V BIAS ON THE AMP BOARD BY CUTTING THREE TRACES TO THE SECTION TO BE USED
CUT THE TRACE TO U1 PIN 3
CUT THE TRACE TO U1 PIN 4
CUT THE TRACE TO U1 PIN 7
JUMP GND #1 TO TRACE GOING TO U1 PIN 3
JUMP -12VDC #1 TO U1 PIN 4
JUMP +12VDC #1 TO U1 PIN 7

JUMPER R7
CUT TRACE HERE ON SOLDER SIDE
CUT TRACE HERE ON SILK SCREEN SIDE
CUT TRACE HERE ON SILK SCREEN SIDE
CUT TRACE HERE ON SILK SCREEN SIDE

AMP-F
SCHEMATIC
Page 7 of 7
Date: 12/20/97 By: R. Fenske
Rev. Date: 08/08/11 By: M. Roseberry
EPCHI-B-EPC SCHEMATIC

THE EPCHI BOARD PROVIDES ELECTRONIC PRESSURE CONTROL OF ONE GAS (page1) AND ALSO PROVIDES THE HIGH VOLTAGE NEEDED TO POWER EITHER THE PID LAMP OR THE FPD PHOTO-MULTIPLIER TUBE (page2).

AN EXTERNAL INPUT (10mV/psi) IS NECESSARY FOR COMPUTER CONTROL OF THE EPC.

THE LM324s IN THIS CIRCUIT OPERATE USING +12V OR PIN 4 GND ON PIN 5, AND -12V ON PIN 11.

SPADE LUG

PRESSURE SENSOR CIRCUIT: DETERMINES ACTUAL PRESSURE

ZERO OFFSET ADJUST

POWER SUPPLY SECTIONS

-12 V #1

-12 V #2

+12V

+1.2V

-1.2V

+12V

-12V

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

RED WIRE OF PHONE CABLE TO DISPLAY BD. "TOTAL SETPOINT" (PUSHBUTTON)

THE EPCHI BOARD PROVIDES ELECTRONIC PRESSURE CONTROL OF ONE GAS (page1) AND ALSO PROVIDES THE HIGH VOLTAGE NEEDED TO POWER EITHER THE PID LAMP OR THE FPD PHOTO-MULTIPLIER TUBE (page2).

SETPOINT CIRCUIT: USER ADJUSTS TO SET DESIRED PRESSURE

SPADING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF EPC FUNCTIONS

REGULATOR DRIVER CIRCUIT

SPADING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

THE EPCHI BOARD PROVIDES ELECTRONIC PRESSURE CONTROL OF ONE GAS (page1) AND ALSO PROVIDES THE HIGH VOLTAGE NEEDED TO POWER EITHER THE PID LAMP OR THE FPD PHOTO-MULTIPLIER TUBE (page2).

THE LM324s IN THIS CIRCUIT OPERATE USING +12V OR PIN 4 GND ON PIN 5, AND -12V ON PIN 11.

SETPOINT CIRCUIT: USER ADJUSTS TO SET DESIRED PRESSURE

SPADING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF EPC FUNCTIONS

REGULATOR DRIVER CIRCUIT

THE LM324s IN THIS CIRCUIT OPERATE USING +12V OR PIN 4 GND ON PIN 5, AND -12V ON PIN 11.

SETPOINT CIRCUIT: USER ADJUSTS TO SET DESIRED PRESSURE

SPADING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF EPC FUNCTIONS

REGULATOR DRIVER CIRCUIT

THE LM324s IN THIS CIRCUIT OPERATE USING +12V OR PIN 4 GND ON PIN 5, AND -12V ON PIN 11.

SETPOINT CIRCUIT: USER ADJUSTS TO SET DESIRED PRESSURE

SPADING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF EPC FUNCTIONS

REGULATOR DRIVER CIRCUIT

THE LM324s IN THIS CIRCUIT OPERATE USING +12V OR PIN 4 GND ON PIN 5, AND -12V ON PIN 11.

SETPOINT CIRCUIT: USER ADJUSTS TO SET DESIRED PRESSURE

SPADING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

SUMMING CIRCUIT: ADDS LOCAL SETPOINT AND EXTERNAL INPUT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF EPC FUNCTIONS

REGULATOR DRIVER CIRCUIT
THE HIGH VOLTAGE SECTION CONTAINS THE CIRCUITS THAT SUPPLY POWER TO THE FPD PHOTO-MULTIPLIER TUBE.

USER ADJUSTS TO SET DESIRED VOLTAGE FOR FPD

COMPARES THE ACTUAL CURRENT OR VOLTAGE (PIN 13) TO THE SETPOINT CURRENT OR VOLTAGE (PIN10)

TRANSISTORS Q1 & Q2 PROVIDE THE REQUIRED INPUT VOLTAGE TO THE HIGH VOLTAGE POWER SUPPLY

HIGH VOLTAGE SECTION CONTAINS THE CIRCUITS THAT SUPPLY POWER TO THE FPD PHOTO-MULTIPLIER TUBE.

TRANSISTORS Q1 & Q2 PROVIDE THE REQUIRED INPUT VOLTAGE TO THE HIGH VOLTAGE POWER SUPPLY
THE HIGH VOLTAGE SECTION CONTAINS THE CIRCUITS THAT SUPPLY POWER TO THE HID ELECTRODE.

- **Setpoint Circuit**: User adjusts to set desired current for HID.
- **X 1000 Differential Amplifier**: Compares the actual current or voltage (PIN 13) to the setpoint current or voltage (PIN 10).
- **7.5VDC @70 CURRENT**: Provides the required input voltage to the high voltage power supply.
- **Transistors Q1 & Q2**: Ensure high current is delivered to the high voltage power supply.

**High Voltage Output Feedback to Differential Amplifier**:

- **1500 VDC Max. Output**: Provides the maximum output voltage for the HID.
- **EMCO L15B High Voltage Power Supply**: Supplies the required voltage to the high voltage section.
- **R13 1M**: Divides the high voltage output to the chassis ground.
- **R9 10M**: Further divides the voltage for safety.
- **R16 10M**: Further reduces the voltage for safety.
- **C3 0.1 uF**: Filters the voltage for stability.

**Power Supply Section**:

- **28 VAC (Green)**: Supplies power to the high voltage section.
- **28 VAC (White)**: Supplies power to the control section.
- **Power Supplies**: 20V Reg. for HID, 20V Unreg.
- **J1**: Connects the high voltage section to the display board.

**Feedback to Display Board**:

- **Black Wire of Phone Cable to Display BD. “LED”**: Indicates the feedback signal.
- **Yellow Wires of Phone Cable to Display BD. “Actual”**: Indicates the current feedback signal.

**Diode**: Protects the circuit from reverse voltage.

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**Notes**:

- **Date**: 12/20/97
- **Rev. Date**: 07/13/15
- **By**: M. Roseberry

**Filename**: epchi-b2-HID.tcw
THE HIGH VOLTAGE SECTION CONTAINS THE CIRCUITS THAT SUPPLY POWER TO THE PID LAMP

SETPOINT CIRCUIT:
USER ADJUSTS TO SET DESIRED CURRENT FOR PID

X 1000 DIFFERENTIAL AMPLIFIER:
COMPARSES THE ACTUAL CURRENT OR VOLTAGE (PIN 13) TO THE SETPOINT CURRENT OR VOLTAGE (PIN10)

POWER SUPPLY SOURCE:
+20V UNREGULATED FOR PID
5 OHM 5 WATT R2

FEEDBACK TO DIFFERENTIAL AMPLIFIER

THE HIGH VOLTAGE OUTPUT
-700 VDC
R9 100K

EMCO L15B HIGH VOLTAGE POWER SUPPLY

R10 1K

JUMP FOR PID

C3 0.1 uF

CHASSIS GROUND
TO PID LAMP
R16 10M

POWER SUPPLY SECTION

D1 IN4007
SEE PAGE 1 FOR 115V AND 12V POWER SUPPLIES
C4 100 uF
EPCHI GROUND

THE LM324 AND THE LF347 IN THIS CIRCUIT OPERATE USING +12V ON PIN 4 AND -12V ON PIN 11.

YELLOW WIRES OF PHONE CABLE TO DISPLAY BD. "ACTUAL"

BLACK WIRE OF PHONE CABLE TO DISPLAY BD. "LED"
**THE EPC BOARD PROVIDES ELECTRONIC PRESSURE CONTROL OF GASES WITHIN THE GAS CHROMATOGRAPH.**

**AN EXTERNAL INPUT OF (10mV / PSI) IS NECESSARY FOR COMPUTER CONTROL OF THE EPC.**

**THERE ARE TWO IDENTICAL CIRCUITS ON THIS BOARD.**
FID IGNITOR OR NPD VOLTS PUSHBUTTON CIRCUITS ON DISPLAY BOARD

SIGNAL + TO DISPLAY BUFFER AMP SEE PAGE 2

SOLENOID CIRCUITS FOR ACTIVATION OF 'SPLIT VENT' OR OPTIONS

AC HOT AC NEUTRAL SWITCHED SWITCHED

MOC3030 (220V-MOC3040)

100 OHM 1 WATT

100 OHM 1 WATT

TO SOLENOID SEE AC BLOCK SCHEM.

10 VAC INPUT FROM TRANSFORMER

25 AMP BRIDGE RECTIFIER

LM338 BOTTOM VIEW

10000 uF CAPACITOR

100 OHM 1 WATT

12 VDC INPUT

ADJ

SETPOINT VOLTAGE

FID IGNITOR ASSEMBLY ON UPRIGHT METAL BRACKET ON THE LEFT SIDE OF THE CHASSIS CIRCULATION FAN

FID IGNITOR ADJUSTMENT POT P1 IS TYPICALLY SET TO -400. WHEN MOMENTARY SWITCH IS FLIPPED UP, IGNITOR IS AT MAX VOLTAGE (-1000)

FID IGNITOR NORMALLY CLOSED MOMENTARY ON SWITCH (ELIMINATE FOR NPD)

1K FOR FID IGNITOR 500 OHM FOR NPD

R1

100 OHM

TOTAL SETPOINT PUSHBUTTON

PHONE JACK FROM FID IGNITOR ASSEMBLY

PLUGS INTO PUSH TERMINALS NEXT TO DETECTOR ASSEMBLY

IGNITOR/NPD BEAD 1 OHM AT ROOM TEMP.

YELLOW LED INSTALLED BACKWARDS FOR NEGATIVE FID IGNITOR OR NPD VOLTAGE

FID IGNITOR OR NPD VOLTS CIRCUIT

310 DISPLAY-D SCHEMATIC

Page 3 of 3

Date: 12/20/97 By: R. Fenske

REV.: 07/01/99 By: R. PFEIFER

Filename: 310display-d3.tcw
SOLENOID CIRCUIT FOR ACTIVATION OF 'SPARGE', 'SPLIT VENT', 'CRYO TRAP'

There are three identical solenoid circuits. (Ckt. #1, Ckt. #2, Ckt. #3)

Solenoid input from A/D board

Relay circuit for activation of 'Valve 1'

TO LIGHT THE VALVE OR VACUUM PUMP LED(S) ONLY, THIS SECTION OF ANY OF THE THREE SOLENOID CIRCUITS IS USED.

There are three identical solenoid circuits to select from: (Ckt. #1, Ckt. #2, Ckt. #3)

Jumper pins 1 & 2 of the MOC do not install the chip or the socket.

Valve 2, Vacuum pump: yellow LED (installed backwards)

Display-K Schematic

Date: 12/20/97
By: R. Fenske

Rev. Date: 10/18/02
By: M. Watts
VIRTUAL OVEN PROTECT

+12V

P1
20K

G
LOCAL SETPOINT
PUSHBUTTON

J1
PHONE JACK
TO OVEN BOARD

R
TOTAL SETPOINT
PUSHBUTTON

Y
ACTUAL
PUSHBUTTON

B
LED (SEE CHART)

SIGNAL +
TO DISPLAY
BUFFER AMP
SEE PAGE 2

TEMP. ACTUAL
TO ALARM
CIRCUIT SEE
PAGE 2

MULTIGAS 2 TCD PROTECT

+12V

P1
20K

G
LOCAL SETPOINT
PUSHBUTTON

J1
PHONE JACK
TO EPC BOARD
J2

R
TOTAL SETPOINT
PUSHBUTTON

Y
ACTUAL
PUSHBUTTON

B
LED (SEE CHART)

10K
10K

FROM CARRIER 1 TO
TCD PROTECT SEE AMP
BOARD SCHEMATI

TO TCD PROTECT
SEE AMP
BOARD SCHEMATI

FROM CARRIER 2 TO
TCD PROTECT SEE AMP
BOARD SCHEMATI

DISPLAY BOARD
PUSHBUTTON
CIRCUITS

8610 DISPLAY-K
SCHEMATIC

Page 5 of 5
THE HEAT BOARD PROVIDES TEMPERATURE CONTROL OF HEATED ZONES IN THE G.C. (ie TCD BLOCK; HEATED INJECTOR; ETC.). EACH HEAT BOARD CONTAINS UP TO THREE TEMPERATURE CONTROL CIRCUITS.

THIS PAGE DEPICTS THE SCHEMATIC OF HEAT CIRCUIT #1. SEE THE NEXT PAGE FOR HEAT CIRCUITS #2 AND #3.

HEAT CIRCUIT #1

SUMMING CIRCUIT: ADDS THE JITTER AND THE SETPOINT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

COMPARATOR CIRCUIT: COMPARES THE ACTUAL TEMPERATURE (PIN 9) TO THE SETPOINT TEMPERATURE (PIN 10)

AC SWITCHING CIRCUIT: SWITCHES AC TO HEATED ZONE TO ACHIEVE DESIRED TEMPERATURE

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF HEATER FUNCTIONS

BLACK WIRE OF PHONE CABLE TO DISPLAY BD. "LED"

THE HEAT BOARD PROVIDES TEMPERATURE CONTROL OF HEATED ZONES IN THE G.C. (ie TCD BLOCK; HEATED INJECTOR; ETC.). EACH HEAT BOARD CONTAINS UP TO THREE TEMPERATURE CONTROL CIRCUITS.

THIS PAGE DEPICTS THE SCHEMATIC OF HEAT CIRCUIT #1. SEE THE NEXT PAGE FOR HEAT CIRCUITS #2 AND #3.

HEAT CIRCUIT #1

SUMMING CIRCUIT: ADDS THE JITTER AND THE SETPOINT TOGETHER PRIOR TO THE COMPARATOR CIRCUIT

COMPARATOR CIRCUIT: COMPARES THE ACTUAL TEMPERATURE (PIN 9) TO THE SETPOINT TEMPERATURE (PIN 10)

AC SWITCHING CIRCUIT: SWITCHES AC TO HEATED ZONE TO ACHIEVE DESIRED TEMPERATURE

LED DRIVER CIRCUIT: PROVIDES VISUAL VERIFICATION OF HEATER FUNCTIONS

BLACK WIRE OF PHONE CABLE TO DISPLAY BD. "LED"
THE DUAL OVEN BOARD #2 PROVIDES CONTROL OF OVEN HEATING AND COOLING. THIS PAGE DEPicts THE POWER SUPPLY CIRCUIT and JITTER CIRCUIT. SEE PAGE TWO FOR OVEN HEATING AND COOLING CIRCUITS.

CHASSIS COOLING FAN CIRCUIT (NOT USED)

DUAL OVEN CONFIGURATION REQUIRES THE USE OF A STANDARD OVEN PCB FOR OVEN #1 AND A SECOND OVEN PCB WITHOUT THE CHASSIS COOLING FAN CIRCUIT FOR OVEN #2. IF NECESSARY, A STANDARD OVEN BOARD MAYBE USED FOR OVEN #2, PROVIDED THAT THE CHASSIS COOLING CIRCUIT IS LEFT UN-USED. OVEN-F #2 IS THE SCHEMATIC DIAGRAM FOR THE OVEN BOARD WITHOUT THE CHASSIS COOLING CIRCUIT; AS USED FOR THE SECOND OVEN IN A DUAL OVEN CONFIGURATION.

FROM AC DISTRIBUTION BOARD
SWITCHED ACHOT (BROWN)
38 VAC (RED)
GREEN (WHITE)
CHASSIS GROUND

POWER SUPPLY SECTION

JITTER CIRCUIT

THE LM324's IN THIS CIRCUIT OPERATE USING +12V ON PIN 4 AND -12V ON PIN 11.

CAUTION: ACHOT AND ACC ARE HAZARDOUS VOLTAGES AND ARE PRESENT ON THIS AND OTHER CIRCUIT BOARDS WHILE THE G.C. POWER IS ON.
CUT TRACE BETWEEN R18 AND R41 JUMP "TOTAL TEMPERATURE" AND R41 FOR "TOTAL SETPOINT".

The LM324's in this circuit operate using +12V on pin 4 and -12V on pin 11.
AC WIRING AND TYPICAL LAYOUT OF THE SRI MODEL 310 GAS CHROMATOGRAPH
AC WIRING AND TYPICAL LAYOUT OF THE SRI 8610-C GAS CHROMATOGRAPH

BUS BOARDS ARE THE EPC, HEAT, OVEN, PURGE & TRAP AND HIVOILT BOARDS. THESE BOARDS CONTROL THE GAS PRESSURES, DETECTOR PARAMETERS AND TEMPERATURE OF HEATED ZONES WITHIN THE GAS CHROMATOGRAPH. THE CONFIGURATION OF THESE BOARDS DEPENDS ON THE OPTIONS ORDERED.
REMOTE START CIRCUIT
(MOMENTARY GROUNDING OF THE INPUT PRODUCES A 2 SECOND NEGATIVE GOING PULSE ON THE OUTPUT WHICH TRIGGERS THE 203 A/D BOARD REMOTE START FUNCTION.)
DUAL REMOTE START PULSE STRETCHER

REMOTE START CIRCUIT #1
(MOMENTARY GROUNDING OF THE INPUT PRODUCES A 2 SECOND NEGATIVE GOING PULSE ON THE OUTPUT WHICH TRIGGERS THE LAWSON BOARD REMOTE START FUNCTION.)

REMOTE START CIRCUIT #2
(MOMENTARY GROUNDING OF THE INPUT PRODUCES A 2 SECOND NEGATIVE GOING PULSE ON THE OUTPUT WHICH TRIGGERS THE LAWSON BOARD REMOTE START FUNCTION.)
REMOTE START CIRCUIT #1
(MOMENTARY GROUNDING OF THE INPUT PRODUCES A 2 SECOND NEGATIVE GOING PULSE ON THE OUTPUT WHICH TRIGGERS THE LAWSON BOARD REMOTE START FUNCTION.)

REMOTE START CIRCUIT #2
(MOMENTARY GROUNDING OF THE INPUT PRODUCES A 2 SECOND NEGATIVE GOING PULSE ON THE OUTPUT WHICH TRIGGERS THE LAWSON BOARD REMOTE START FUNCTION.)
OPTIONAL AC OUTPUT CIRCUIT #1

U3

1 6
2 5
3 4

R25
100 OHM
1 WATT

MOC3041

TRIAC
Q6004

AC HOT IN

AC OUT #1

OPTIONAL AC OUTPUT CIRCUIT #2

U3

1 6
2 5
3 4

R27
100 OHM
1 WATT

MOC3041

TRIAC
Q6004

AC HOT IN

AC CONTROL
FROM LAWSON BD.
RELAY 'B'

AC OUT #2