

## Description

### Introduction

The AC Current transducer (PAC) is a compact instrument that accepts an ac current input and provides a proportional dc current output. This transducer responds to the average value of the input signal.

The PAC is available in a single or triple configuration. The triple unit has three totally independent transducers sharing a single housing.

### Installation

#### Mechanical Installation

The PAC is enclosed in an extruded aluminum housing. The mounting plate features keyhole cutouts so that the entire housing can be removed by just loosening the screws. See the Surface Mount (SM) housing sheet for a physical outline and mechanical installation requirements.

#### Electrical Installation

All electrical connections are made to the terminal block on the front of the unit. See figure 1.

**External Power.** If the unit is powered externally, connect 120Vac to the terminals marked EXT PWR. Internally powered units have the electronics power supply fed from the potential transformer connections at terminals 3 and 4.

### Output

Constant current outputs do not react to resistance changes in the wire, within the very wide ranges specified, so that no calibration is required to compensate for lead length. If a voltage input is

required by the measuring or telemetry equipment a precision resistor can be placed at the measuring end to create a voltage from the constant current. The low impedance constant current loops are not as susceptible to noise and transients as are voltage outputs, but should be protected by using shielded wire if the cable runs exceed 65 feet. Outputs from several transducers can be run in one common shield. The shield should be firmly grounded at one end only.

### Calibration

#### Introduction

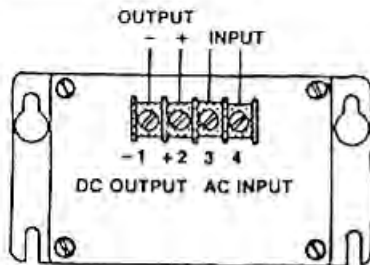
This section provides information necessary for unit calibration. Each unit is calibrated and checked for proper performance at the factory before shipping.

#### Equipment Required

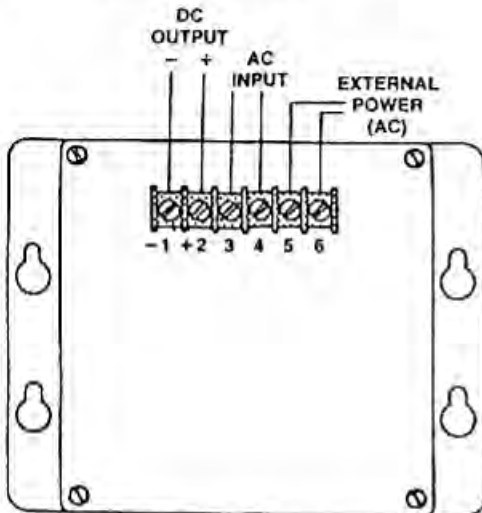
- o Voltage or current source: Rotex Model 811A or equivalent.
- o Wire-wound precision resistor, 1K ohm for 0-1mA output, and voltmeter. Both with 0.05% accuracy or better. A milliammeter with 0.05% accuracy may be used instead of the voltmeter and precision resistor.

#### WARNING

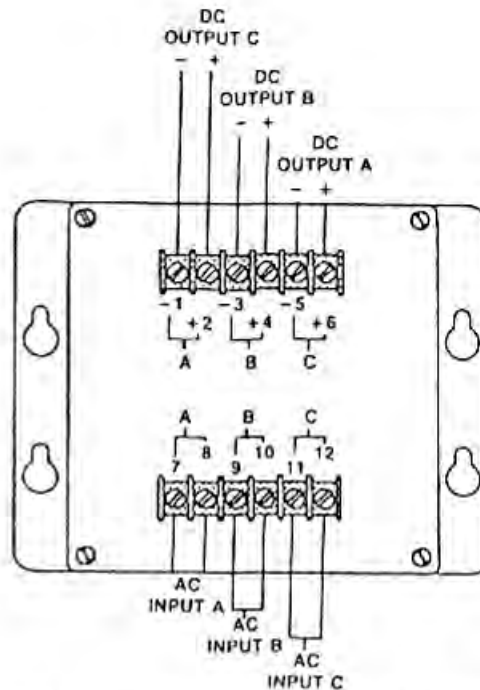
USE EXTREME CARE WHEN CALIBRATING UNIT. HIGH VOLTAGES ARE PRESENT. VOLTAGES PRESENT CAN BE LETHAL.



PAC Small Case Connections



PAC Large Case Connections, Single Configuration



PAC Large Case Connections, Triple Configuration

Figure 1. Electrical Connections

**Procedure**

**PAC Single (standard), Zero-based Outputs, Self-powered (0-1mA output)**

Connect the equipment as shown in figure 2. Measure the 0-1mA output as 0-1 volts across a 1K ohm wire-wound precision resistor or current meter. Apply 100% input. Adjust the CAL potentiometer for 100% output. Apply 10% input. Read 10%  $\pm 0.1\%$ . Apply 50% input. Read 50%  $\pm 0.1\%$ .

**PAC Single, 4-20mA/1-5V Outputs with External Power**

Connect the equipment as shown in figure 2. Measure the 4-20mA output as 1-5 volts across a 250 ohm wire-wound precision resistor or current meter. Apply 10% input. Adjust the ZERO potentiometer for 10% output. Apply 100% input. Adjust the SPAN potentiometer for 100%. Apply 50% input. Read 50%  $\pm 0.1\%$ . Apply 10% input. Read 10%  $\pm 0.1\%$ .

**PAC Triple Configurations**

For triple configurations repeat the above steps three times.

# PAC

Page 4

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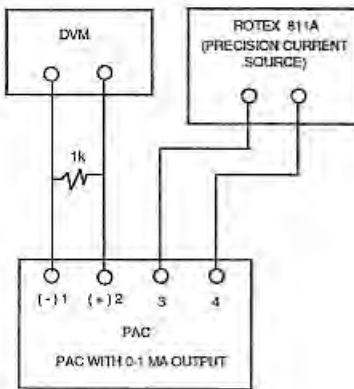
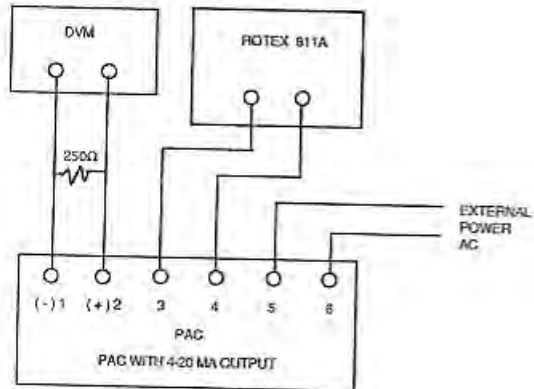


Figure 2 Calibration Procedures



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**DO NOT SCALE DRAWING**

TOLERANCES UNLESS NOTED  
 XX = ±.1  
 XX = ±.03  
 XXX = ±.010  
 ANGLES = 0.010  
 HOLES PER SIDE STANDARD

DRAWN R. KELLEY

CHECKED J. B.

ENGINEER J. G. Colwell

SCALE NONE

DATE 9/86

6/87

4/87

CATEGORY

SCHEMATIC

TITLE

PAC  
 SINGLE CONFIGURATION  
 (STANDARD)

DRAWING NUMBER

323-401-00

REVISION

A

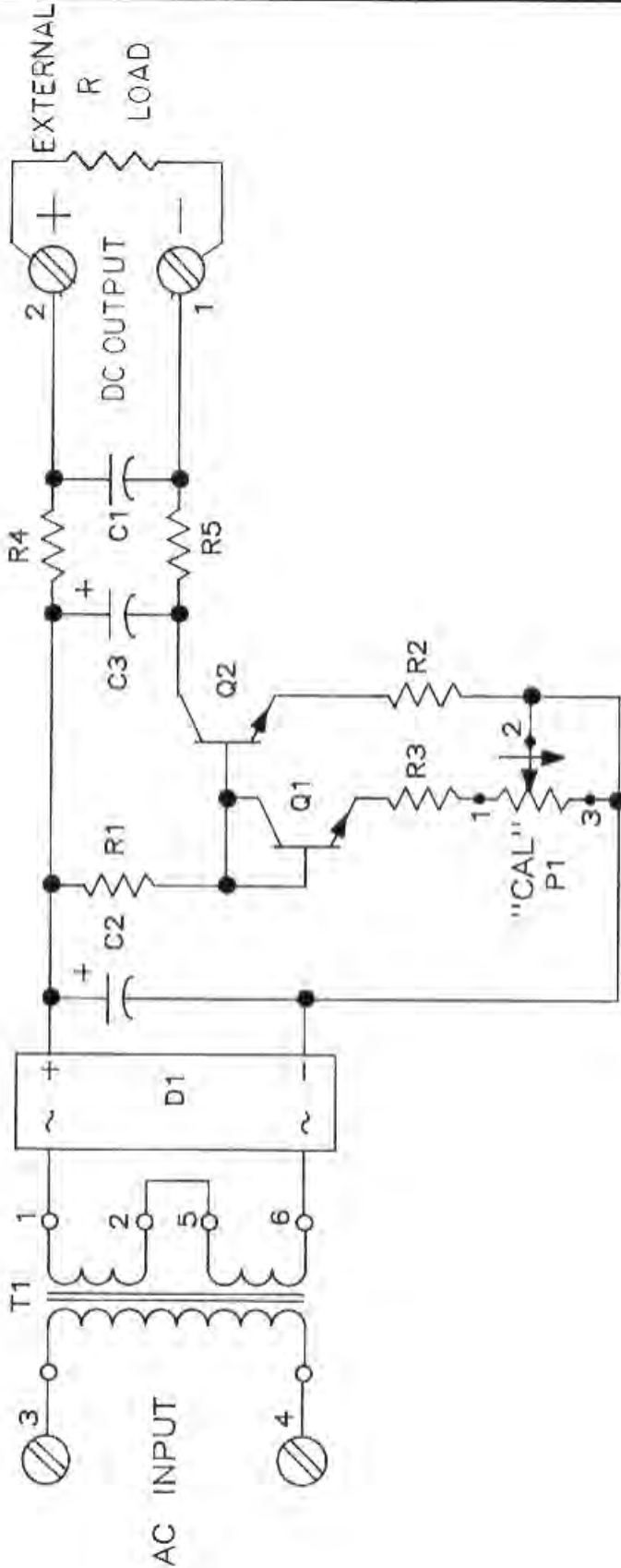
APPROVAL

BY JAO

DATE 1/3/87

REVISED BY INITIAL RELEASE

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- 2. CONNECTION ON TERMINAL BLOCK.
  - 1. REF.: OUTPUTS ARE ZERO BASED (EG, 0-1MA).
- NOTES-



UNITED STATES

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TOLERANCES UNLESS NOTED	DATE	BY
X - .01	8/24/64	R. K. K...
XX - .005		
XXX - .0025		
ANGLES .125		
HOLE PER DIA STANDARD	INVENTOR	DESIGNER
	SCALE	

DEFINITION

**SCHMATIC**  
**PAC SINGLE, SUPPRESSED, ZERO OUTPUTS**

FORM NUMBER

**323-402-00**

REVISION

**A**

DESIGNED BY

INITIAL RELEASE

DATE

8/24/64

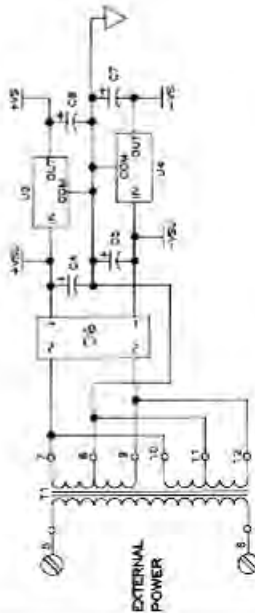
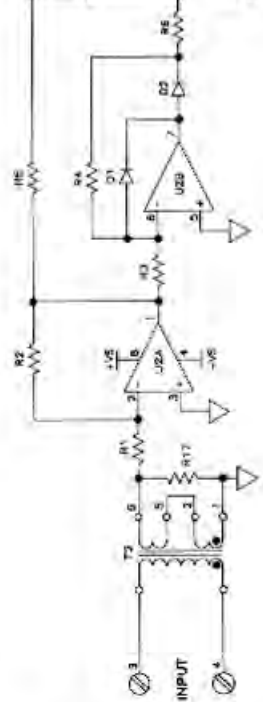
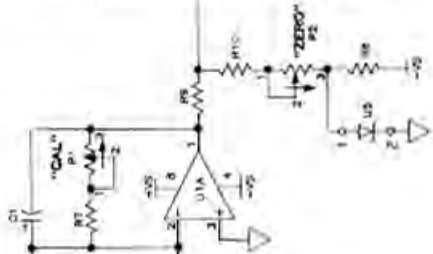
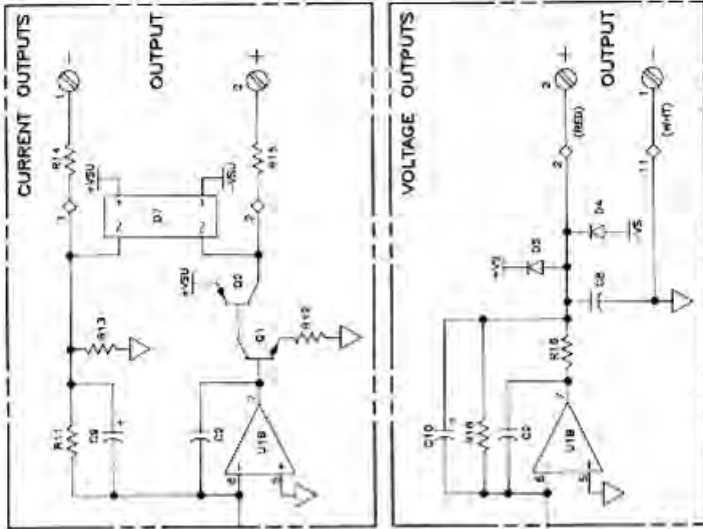
BY

MD

APPROVAL

W. J. ...

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2. CONNECTION ON TERMINAL BLOCK.  
1.  $\diamond$  INDICATES WIRING PAC ON P. C. BOARD

NOTES



UNITED STATES

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TOLERANCES (UNLESS NOTED):  
 .5 - .125  
 .25 - .063  
 .100 - .030  
 .050 - .015  
 .010 - .005  
 .005 - .0025  
 .0025 - .00125  
 .00125 - .000625  
 .000625 - .0003125  
 .0003125 - .00015625  
 .00015625 - .000078125  
 .000078125 - .0000390625  
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UNITED STATES

**DO NOT SCALE DRAWING**

TOLERANCES UNLESS NOTED

XXX - .001  
XX - .005  
X - .010  
ANGLES - .25°  
HOLE SIZE STANDARD

DIMENSIONS IN INCHES

CATEGORY: PC ASSEMBLY

FILE: PAC SINGLE (STANDARD) ZERO BASED OUTPUTS

STANDARD NUMBER: 323-501-00

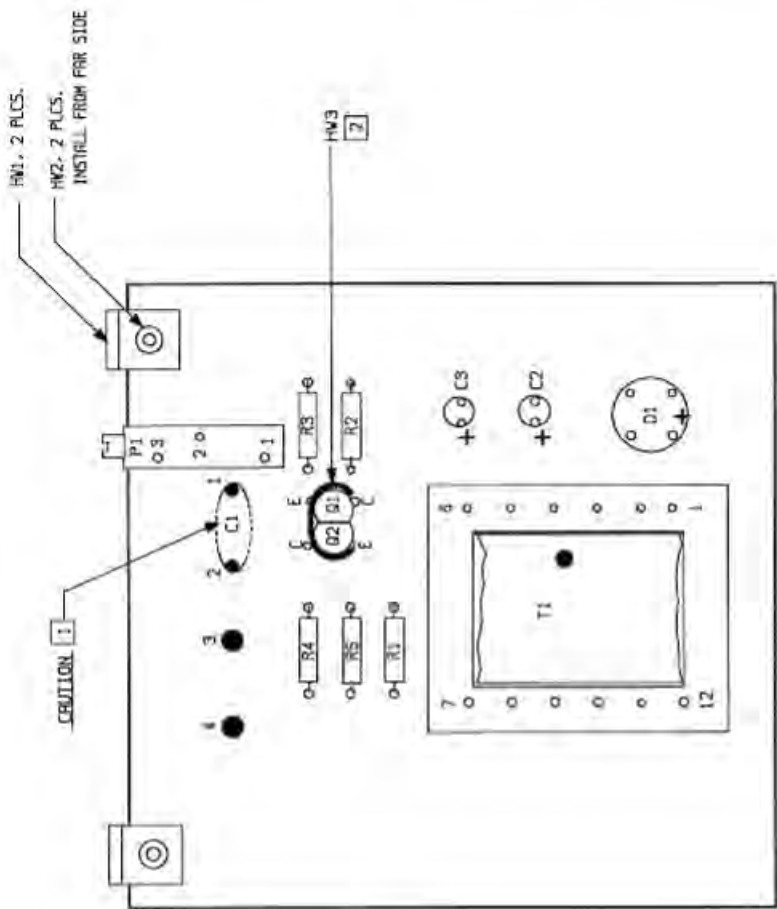
DESIGN: A

REVISION BY: INITIAL REVISION

DATE: 5/87

APPROVAL: [Signature]

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1. ALL LEADS MUST BE SOLDERED TO PADS.
2. WHEN SHOWN, ALL JUMPERS ARE 22 AWG BUSS, TEFLON SLEEVED AS REQ'D.
3. C1 IS INSTALLED FROM BOTTOM SIDE PARALLEL TO THE BOARD TO CLEAR UNIT CASE. LEADS ARE NOT TO BE CUT BUT ARE SOLDERED TO PADS AND RUN TO TERMINAL BLOCK. SEE WIRING LIST.

NOTES:





UNITED STATES

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<b>TOLERANCES UNLESS NOTED</b>	<b>DRAWN</b> J. CALLOWAY	<b>12-16</b>
X = ± .1	<b>CHECKED</b> <i>W. J. ...</i>	<b>37</b>
XX = ± .03	<b>ENGINEER</b> <i>W. J. ...</i>	<b>13-17</b>
XXX = ± .010		
ANGLES = 30		
HOLE PER SAE STANDARD		
<b>DIMENSIONS IN INCHES</b>	<b>SCALE</b> NONE	

CATEGORY: PC ASSEMBLY

**PAC SINGLE SUPPRESSED ZERO OUTPUT**

DRAWING NUMBER  
**323-502-00**

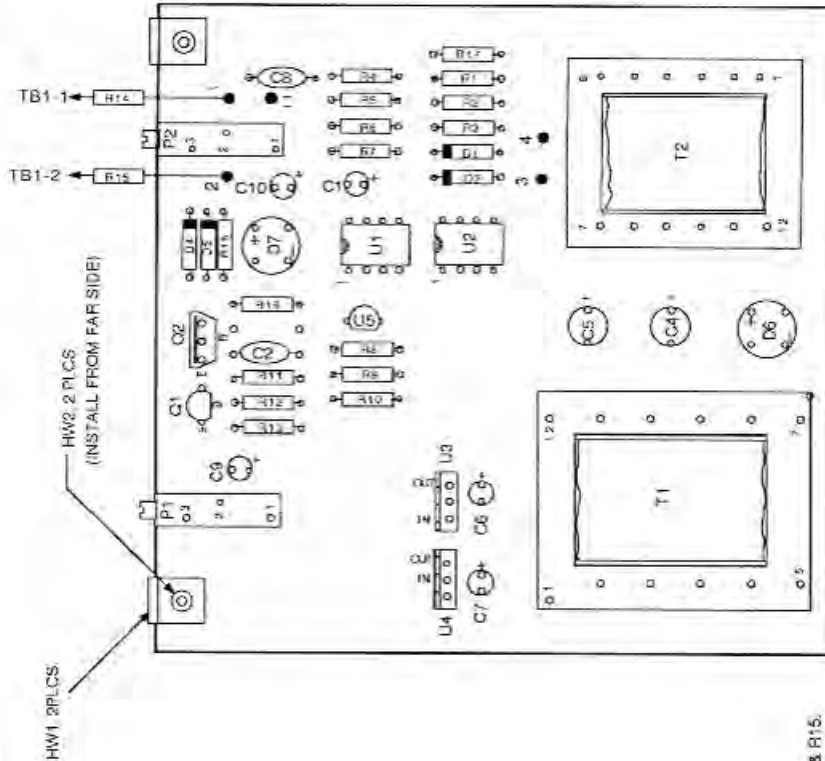
REVISED BY  
**ECO 6644**

DATE  
*12/16/87*

BY  
*[Signature]*

REVISION  
**B**

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3. SEE WIRING LIST FOR LOCATION OF R14 & R15.
  2. ALL LEADS MUST BE SOLDERED TO PADS.
  1. WHEN SHOWN, ALL JUMPERS ARE 22AWG BUS, TEFLON SLEEVED AS REQUIRED
- NOTES:**



UNITED STATES

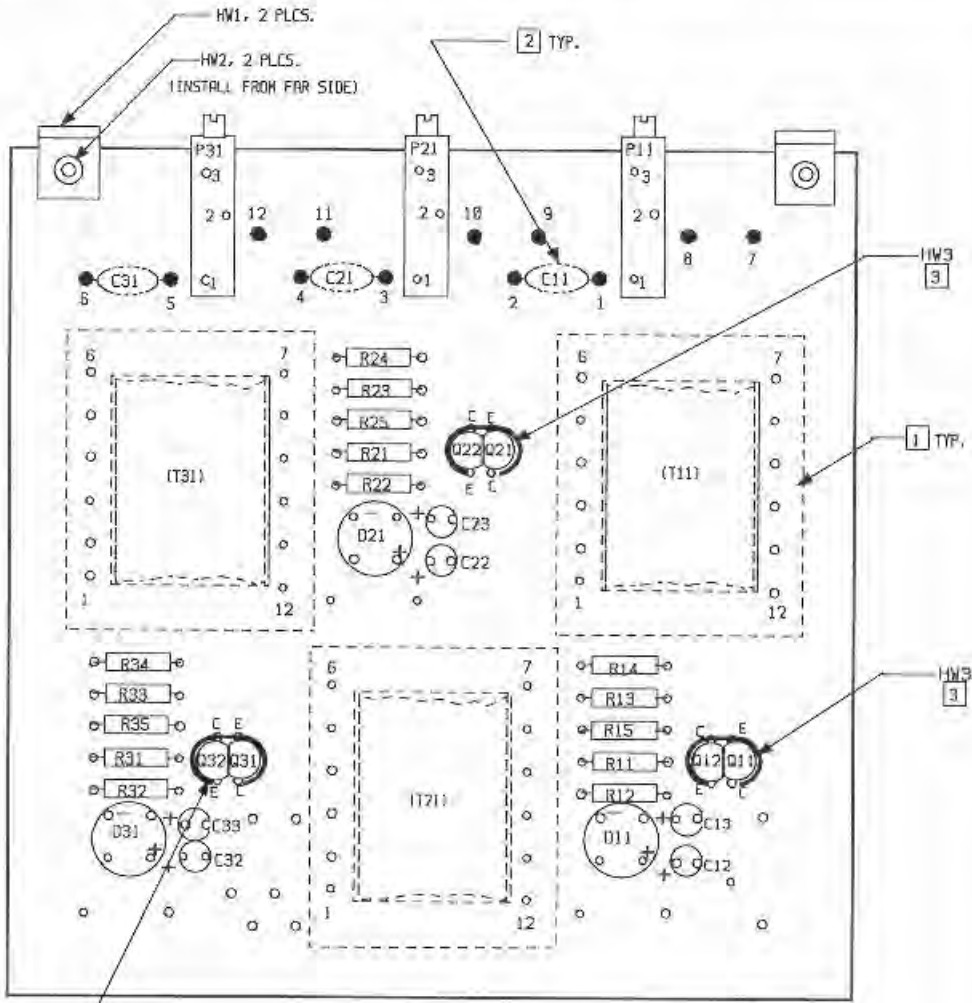
**DO NOT SCALE DRAWING**  
 TOLERANCES UNLESS NOTED  
 FINISH J.V.M. 1/87  
 CHECKED BY [Signature]  
 DIMENSIONS IN INCHES  
 SCALE

CATEGORY **PC ASSEMBLY**  
 TITLE **PAC TRIPLE CONFIGURATION**

DRAWING NUMBER **323-503-00**

REVISION **A**

DESIGNED BY **INITIAL RELEASE**  
 DATE 8/87 BY JAO  
 APPROVAL [Signature]  
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NOTES:

- 1. TRANSFORMERS T11, T21 AND T31 MOUNT ON FAR SIDE OF BOARD.
- 2. CAPACITORS C11, C21 AND C31 MOUNT ON FAR SIDE OF BOARD. LEADS NOT TO BE CUT BUT TO BE SOLDERED TO PADS AND RUN TO TERMINAL BLOCK. (SEE WIRING LIST).
- 3. COAT TRANSISTORS WITH HW4 THERMAL COMPOUND AND INSTALL HW3 HEATSINK.
- 4. WHEN SHOWN, ALL JUMPERS ARE 22 AWG BUS WIRE, TEFLON SLEEVED AS REQUIRED.
- 5. ALL LEADS MUST BE SOLDERED TO PADS.

000001

## RETURN PROCEDURES

**To return equipment to Moore Industries for repair, follow these four steps:**

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

### Warranty Repair –

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

### Non-Warranty Repair –

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
  - a) A note listing the symptoms that indicate the unit needs repair
  - b) Complete shipping information for return of the equipment after repair
  - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

### WARRANTY DISCLAIMER

THE COMPANY MAKES NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY GOODS OR SERVICES SOLD BY THE COMPANY. THE COMPANY DISCLAIMS ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR TRADE USAGE, AND ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY ACKNOWLEDGES THAT THERE ARE NO WARRANTIES IMPLIED BY CUSTOM OR USAGE IN THE TRADE OF THE BUYER AND OF THE COMPANY, AND THAT ANY PRIOR DEALINGS OF THE BUYER WITH THE COMPANY DO NOT IMPLY THAT THE COMPANY WARRANTS THE GOODS OR SERVICES IN ANY WAY.

ANY BUYER OF GOODS OR SERVICES FROM THE COMPANY AGREES WITH THE COMPANY THAT THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY WARRANTY CONCERNING THE GOODS OR SERVICES SHALL BE FOR THE COMPANY, AT ITS OPTION, TO REPAIR OR REPLACE THE GOODS OR SERVICES OR REFUND THE PURCHASE PRICE. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES EVEN IF THE COMPANY FAILS IN ANY ATTEMPT TO REMEDY DEFECTS IN THE GOODS OR SERVICES. BUT IN SUCH CASE THE BUYER SHALL BE ENTITLED TO NO MORE THAN A REFUND OF ALL MONIES PAID TO THE COMPANY BY THE BUYER FOR PURCHASE OF THE GOODS OR SERVICES.

ANY CAUSE OF ACTION FOR BREACH OF ANY WARRANTY BY THE COMPANY SHALL BE BARRED UNLESS THE COMPANY RECEIVES FROM THE BUYER A WRITTEN NOTICE OF THE ALLEGED DEFECT OR BREACH WITHIN TEN DAYS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH, AND NO ACTION FOR THE BREACH OF ANY WARRANTY SHALL BE COMMENCED BY THE BUYER ANY LATER THAN TWELVE MONTHS FROM THE EARLIEST DATE ON WHICH THE BUYER COULD REASONABLY HAVE DISCOVERED THE ALLEGED DEFECT OR BREACH.

### RETURN POLICY

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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