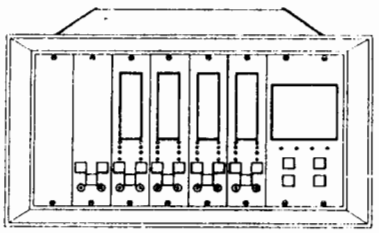
PART NO. 80175-01

3300/01 SYSTEM MONITOR

OPERATION MANUAL

BENTLY NEVADA



NOTICE

READ THE FOLLOWING BEFORE INSTALLING OR OPERATING EQUIPMENT

Bently Nevada Corporation has attempted to identify areas of risk created by improper installation and/or operation of this product. These areas of information are noted as **WARNING** or **CAUTION** for your protection and for the safe and effective operation of this equipment. **Read all instructions** before installing or operating this product. Pay particular attention to those areas designated by the following symbols.

⚠ WARNING

High Voltage present Could cause shock, burns or death.

Do Not touch exposed wires or terminals.

CAUTION

Machine Protection Will Be Lost

SYMBOLS

Special symbols are used in the manual to illustrate specifics in the step by step processes. For example:

FORWARD

This document is for control room personnel who operate the 3300 Monitoring System. The information includes description, disassembly instructions, performance tests, recommended spare parts, field changeable options, specifications and schematics. The procedures are presented in step-by-step graphic format.

RELATED DOCUMENTS

3300 System Overview, 80177
3300 System Installation Instructions, 80172
3300 System Troubleshooting, 80173
3300/10 Power Supply, 80174
Dynamic Data Manager System, 46390-01
Transient Data Manager User Guide, 79206-01
Allen Bradley Communications Interface Module 1770-KF2 User's Manual
Modicon Modbus Protocol Reference Guide PI-MBUS-300 REV B

Document No. 80175 ▪ First Printing: January 1988 ▪ Revision A: November 1989

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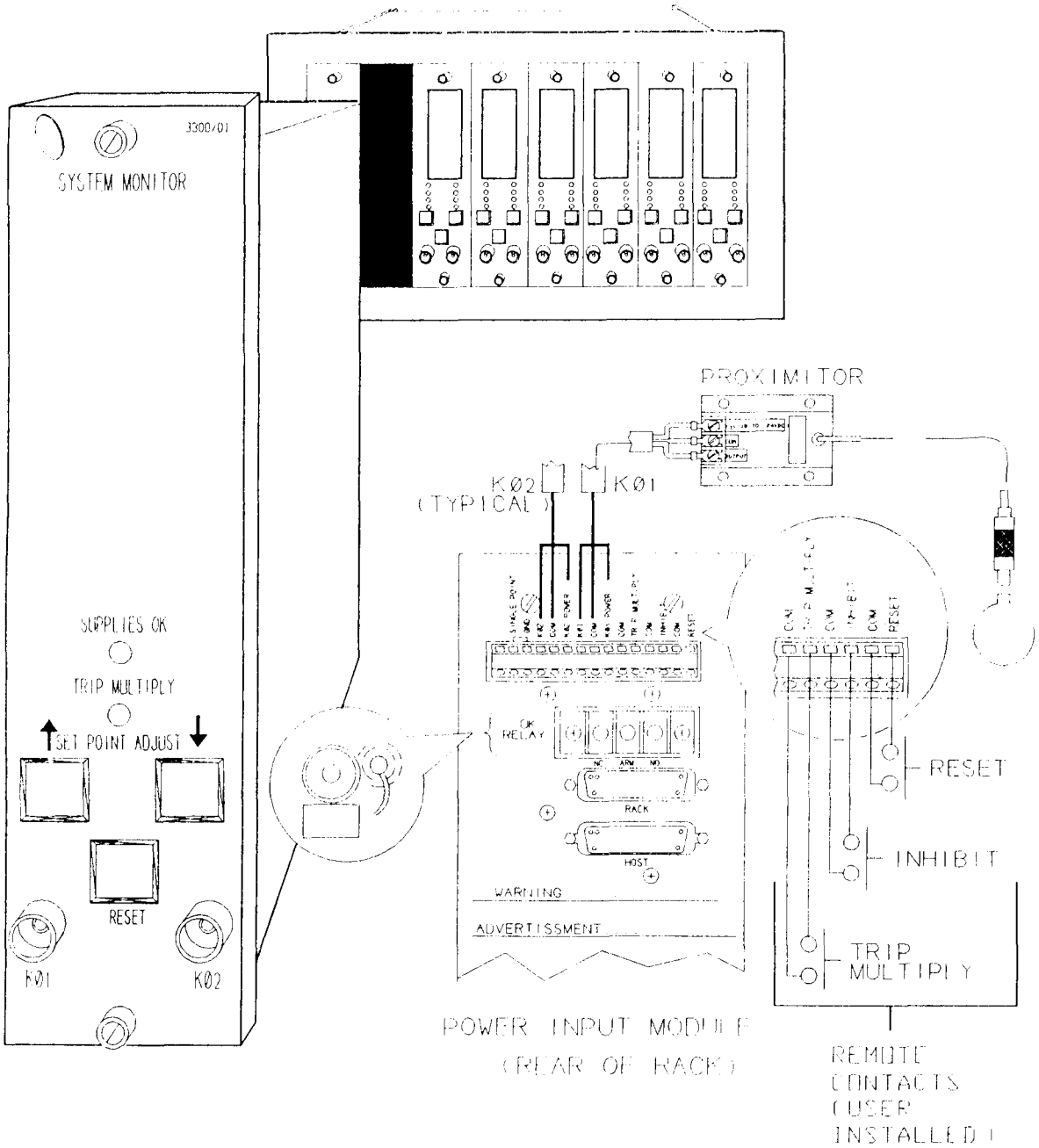
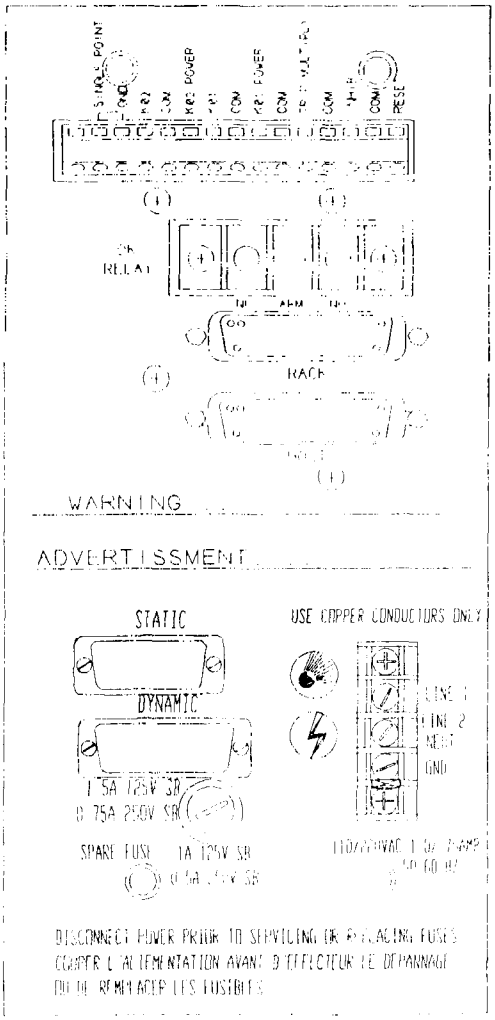
1 SYSTEM MONITOR



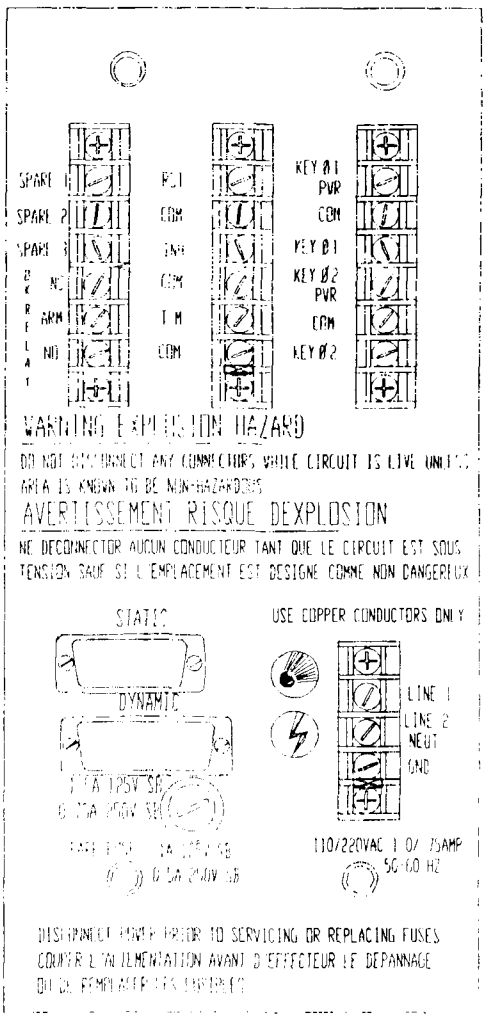
SEE [6] FOR CONNECTIONS TO COMMUNICATIONS PROCESSOR
SEE [14] FOR SERIAL INTERFACE CONNECTIONS

1 SYSTEM MONITOR

Two types of Power Input Modules (PIM) can be used with the System Monitor. The PIM shown below on the left is supplied when the Serial Interface option is specified. It includes the two additional 25-pin serial connectors. The PIM on the right is the standard input module. Whenever the PIM is referenced pictorially in this document, the figure shown is the Serial Interface option PIM. In all these figures, the standard PIM may be substituted for the Serial Interface PIM. All connections to either PIM are the same, only the style of the connectors have been altered.



Serial Interface option PIM



Standard PIM

2 MONITOR FUNCTIONS

SYSTEM POWER-UP INHIBIT

The System Monitor provides a Power-up Inhibit function that allows each monitor to inhibit its alarms during power-up, or whenever a system supply voltage falls below its operating level. After power-up, the inhibit function remains active for approximately 2 seconds. The inhibit function can also be activated by contact closure through terminals on the Power Input Module at the rear of the rack.

SUPPLY VOLTAGES OK

Seven LEDs located behind the front panel of the System Monitor are ON to indicate when supply voltages are functioning. The supply voltages are +VRH, +VRL, +7.5V, +5V REF, -7.5V, and -VT. A green LED on the front panel (SUPPLIES OK), when ON, indicates that all supply voltages are functional.

SYSTEM RESET

The System Monitor provides System Reset capability that is activated by either external contact closure through terminals on the Power Input Module, or by pressing the RESET switch on the front panel.

TRIP MULTIPLY

The System Monitor provides a trip multiply control that is activated by contact closure through terminals on the Power Input Module. When activated, trip multiply allows the alarm setpoints to be multiplied by a factor preset on monitors with Trip Multiply options installed. The Trip Multiply function is indicated by a red LED on the front panel.

STATIC DATA BUS BUFFER

The System Monitor multiplexes signals from the Communications Processor to select static data from the monitors. Static data signals from the monitor are buffered before being sent to the Communications Processor. If the Serial Interface option is installed, the position and data select signals from the Communications Processor are intercepted in the interface. If no Communications Processor is connected the Serial Interface takes over control of the position select and data select signals to gather data.

OK RELAY

The System Monitor drives an OK Relay that is located on the Power Input Module. The single-pole, double-throw (SPDT) relay is used to indicate that the 3300 rack is in an OK condition. The OK Relay is set normally energized. The OK Relay is deactivated either by the system power-up inhibit signal (from System Monitor), or by a not OK signal from the monitors.

2 MONITOR FUNCTIONS

ALARM SETPOINT ADJUST

The System Monitor has two switches on the front panel that adjust alarm setpoint levels on each monitor. One switch is for upscale adjustments and the other is for downscale adjustments.

KEYPHASORS

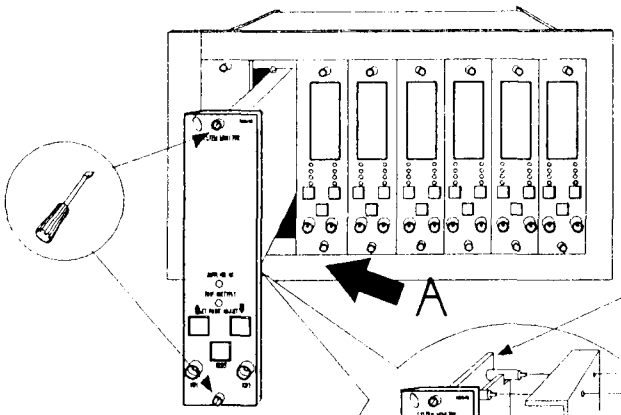
The System Monitor receives input from two Keyphasor transducers through terminals on the power input module and buffers the input for use by the monitors. Buffered Keyphasor signals are also available from the coaxial connectors on the front panel. The System Monitor also provides short-circuit protected Keyphasor power.

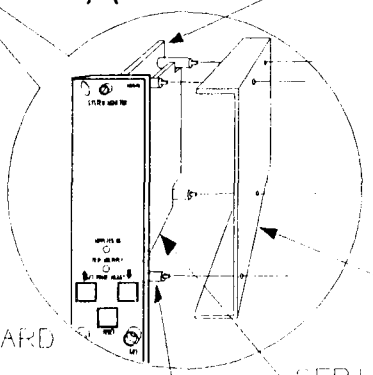
SERIAL INTERFACE OPTION

When installed in the System Monitor, the Serial Interface option provides a communications interface via defined protocols for the transmission of static data from the 3300 rack. The Serial Interface option can operate concurrently with a connected Data Manager Communications Processor.

3 DISASSEMBLY PROCEDURES

1. LOOSEN SCREWS AND PULL SYSTEM MONITOR OUT FROM RACK

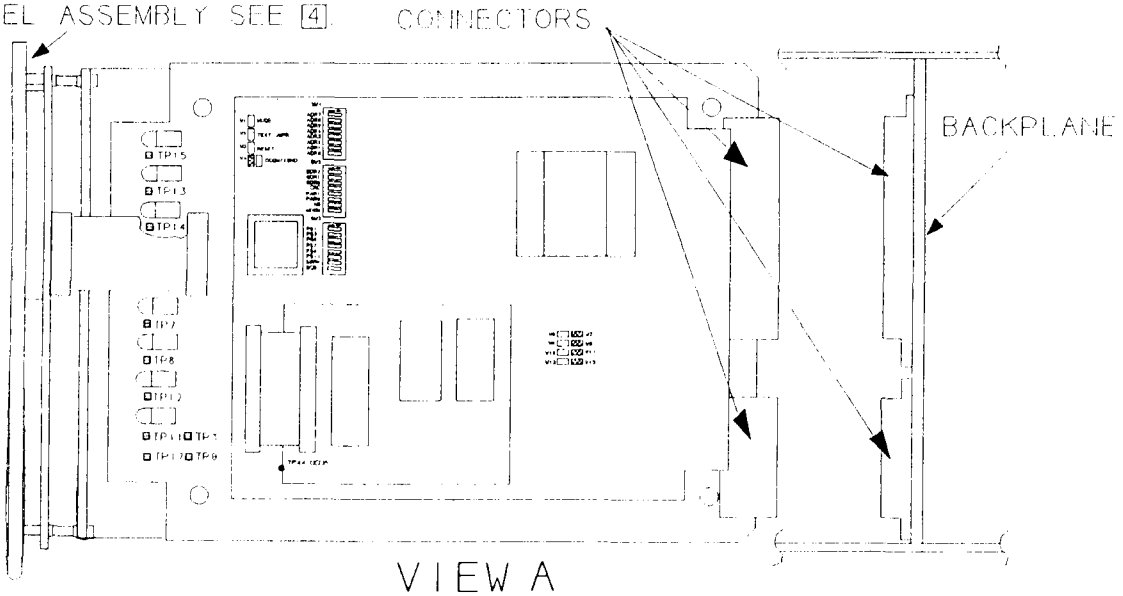




2. REMOVE SIDE COVER BY PINCHING PROTRUDING TIP ON EACH OF 4 STANDOFFS.

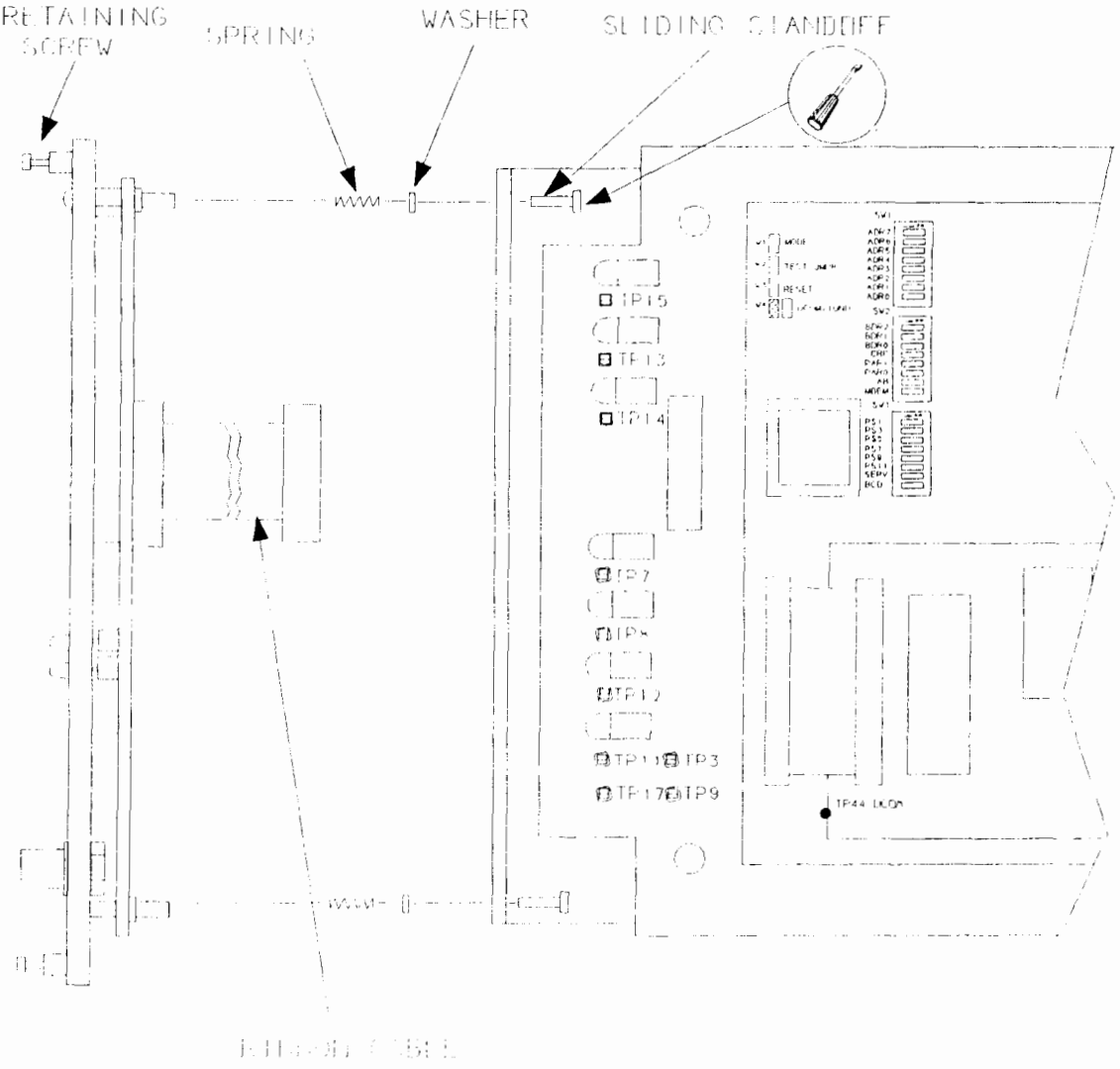
3. REMOVE SERIAL INTERFACE OPTION BY GENTLY PRYING OPTION CIRCUIT BOARD AWAY FROM UNDERLYING CIRCUIT BOARD AT MATING CONNECTOR AND 6 STANDOFFS.

FOR DETAIL OF FRONT PANEL ASSEMBLY SEE [4].



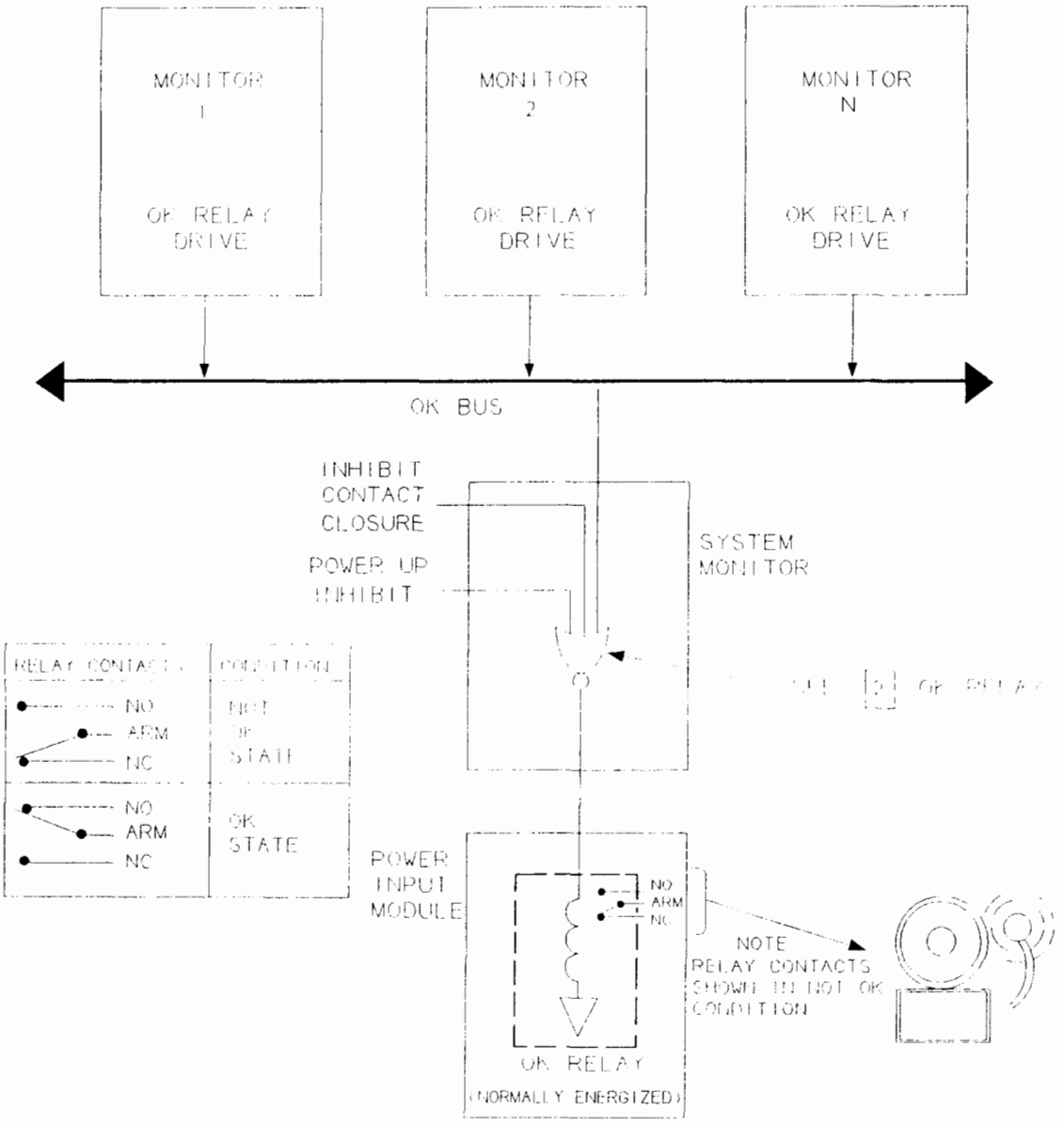
VIEW A

4 FRONT PANEL ASSEMBLY REMOVAL



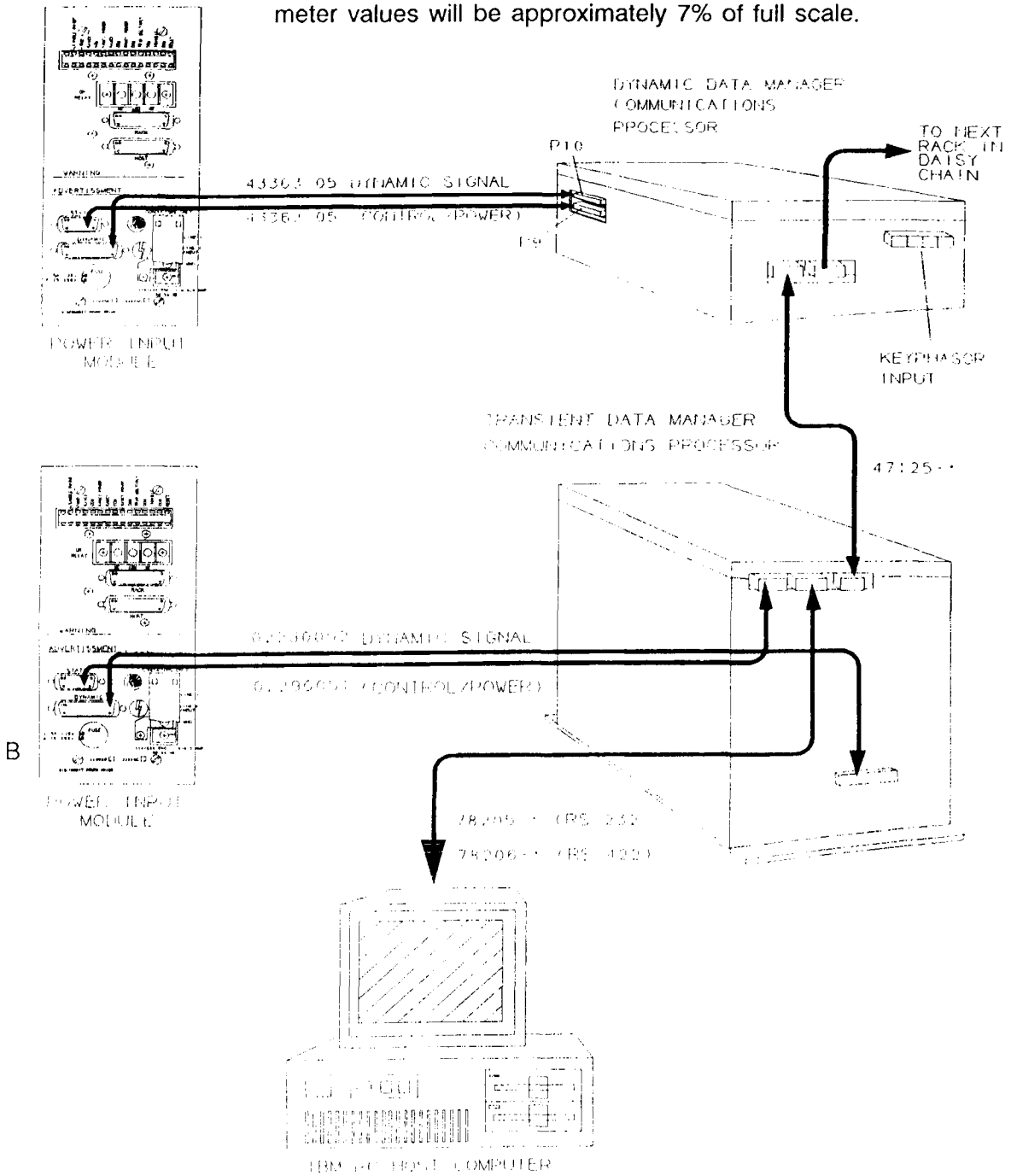
5 OK RELAY CONFIGURATION

THE FOLLOWING DIAGRAM SHOWS THE FUNCTIONAL CONCEPT OF THE OK RELAY
FOR MORE DETAIL REFER TO SCHEMATIC (SEE [T8])

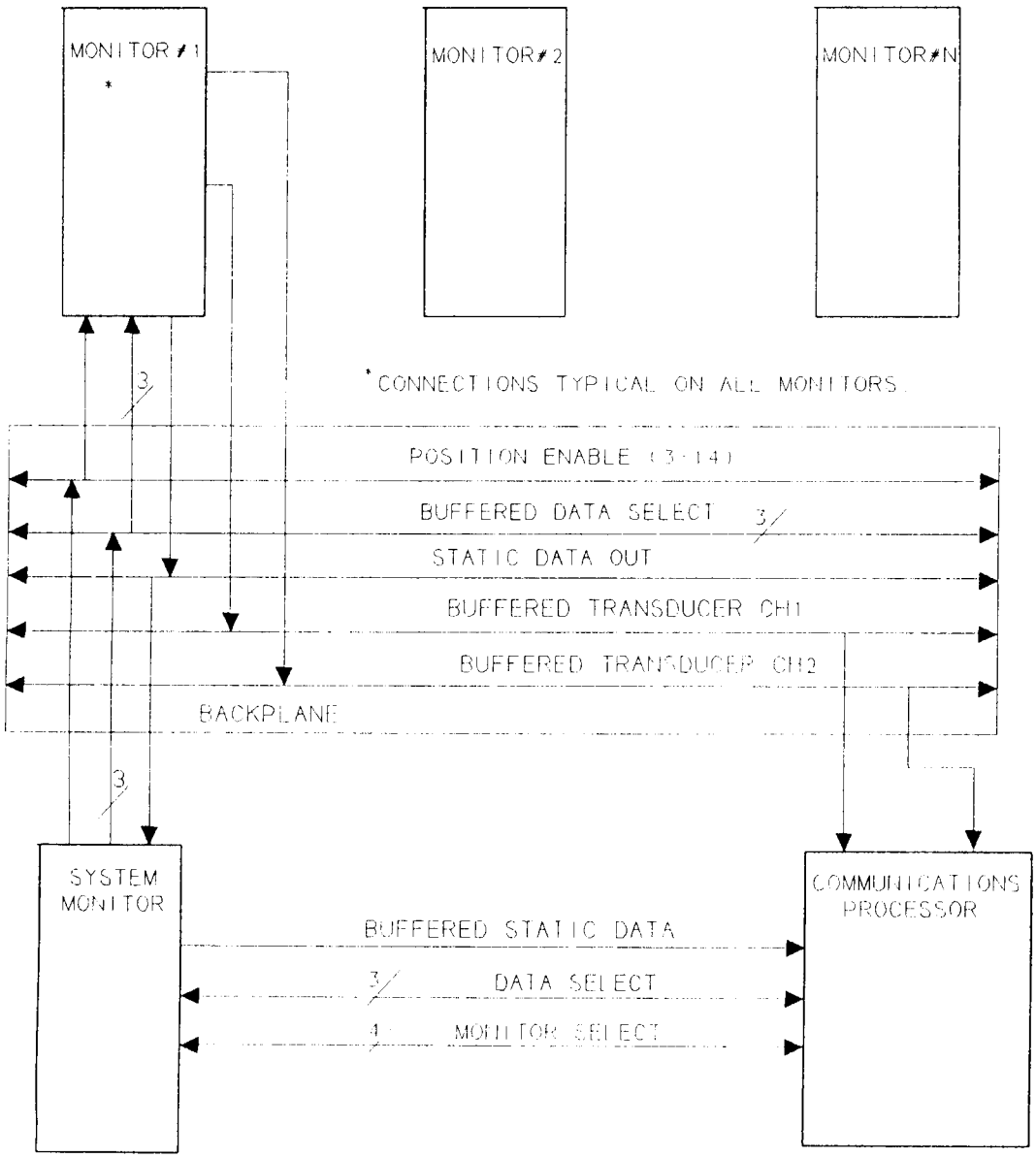


6 COMMUNICATIONS PROCESSOR INTERFACE

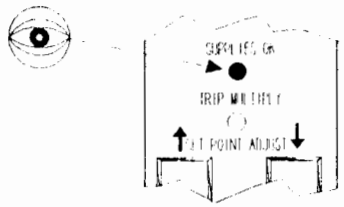
Communications processor systems used with 3300 systems should all operate from the same power source. If they do not and if the 3300 system power goes off, the computer screen will indicate system OK and displayed meter values will be approximately 7% of full scale.



6 COMMUNICATIONS PROCESSOR INTERFACE



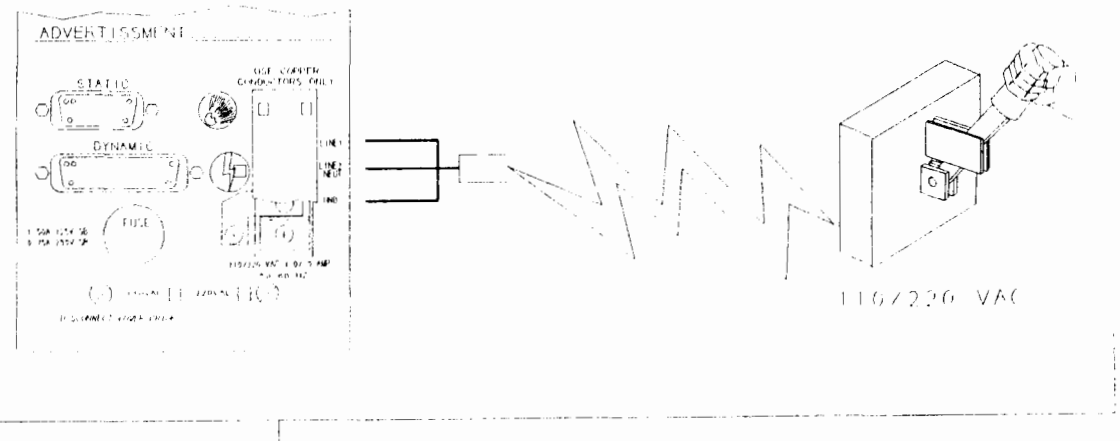
7 PERFORMANCE TESTING

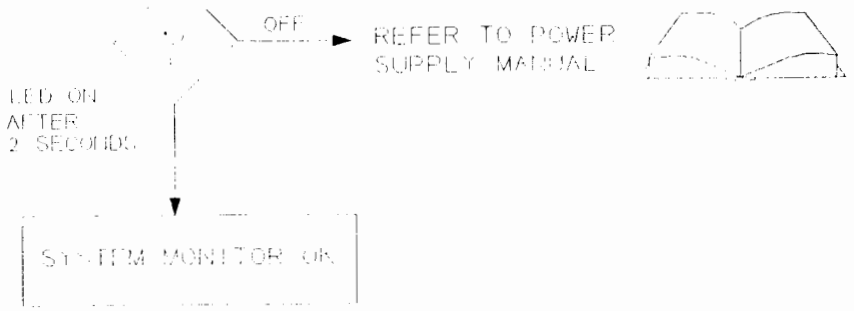


SYSTEM MONITOR

CAUTION

$-V_T$ JUMPERS IN SYSTEM MONITOR AND POWER SUPPLY MUST BE SET TO SAME VOLTAGE (-18 VDC OR -24 VDC) OR **SUPPLIES OK** LED WILL NOT GO ON.



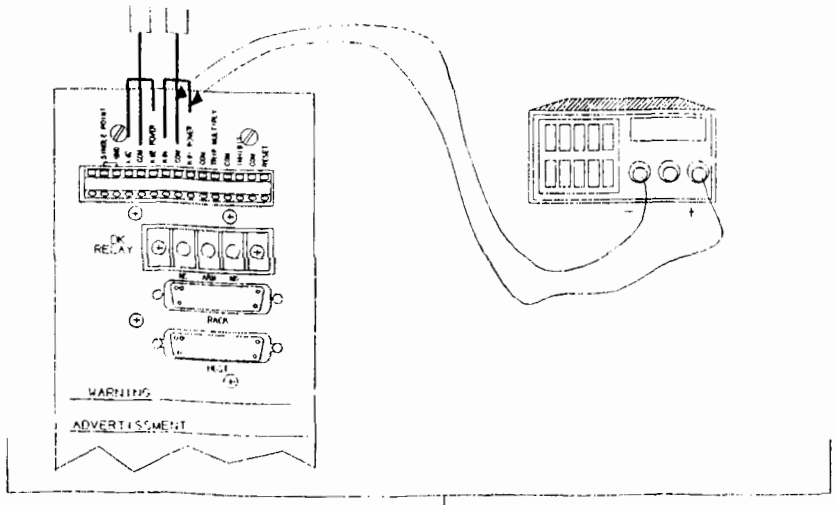


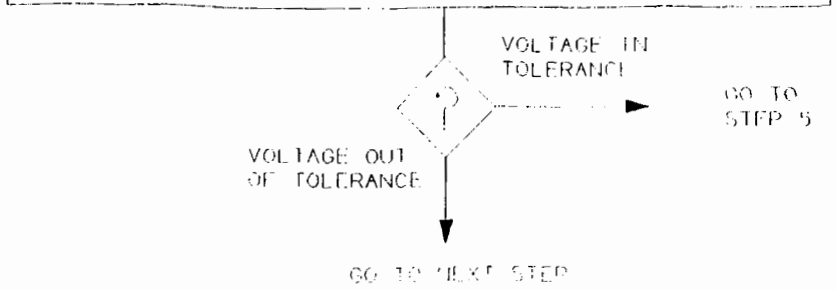
8 KEYPHASOR PERFORMANCE TEST

NOTES: 1. THE FOLLOWING PROCEDURE FOR TESTING KEYPHASOR 1 IS TYPICAL FOR TESTING KEYPHASOR 2

2. MACHINE ASSOCIATED WITH KEYPHASOR UNDER TEST SHOULD BE RUNNING DURING THIS PROCEDURE. IF MACHINE IS NOT TURNING, SIMULATE RUNNING MACHINE INPUT FROM FUNCTION GENERATOR OR TK3 TEST KIT.

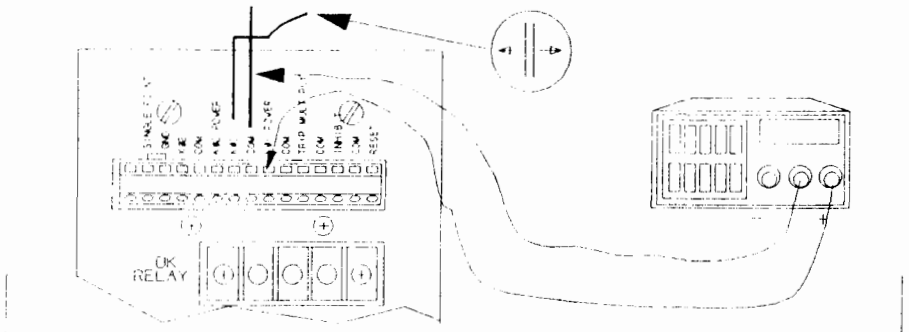
1. MEASURE KEYPHASOR 1 POWER AT POWER INPUT MODULE K01 **POWER** TERMINAL.
TOLERANCE IS -23.7 ± 0.5 VDC
(-17.85 ± 0.45 VDC FOR 3000 PROXIMITOR)





8 KEYPHASOR PERFORMANCE TEST

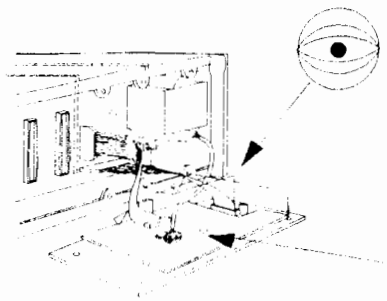
2. DISCONNECT WIRE FROM **K01 POWER** AND MEASURE VOLTAGE AT POWER INPUT MODULE TERMINAL. MEASUREMENT SHOULD MEET TOLERANCE SPECIFIED IN STEP 1.



VOLTAGE IN TOLERANCE → GO TO STEP 4

VOLTAGE OUT OF TOLERANCE

3. LOOSEN SCREWS AND PULL POWER INPUT MODULE OUT FROM REAR OF RACK. EXAMINE CABLING AND CONNECTIONS BETWEEN MODULE AND RACK.



⚠ WARNING

HIGH VOLTAGE LEVELS ARE PRESENT THAT COULD CAUSE SERIOUS INJURY.

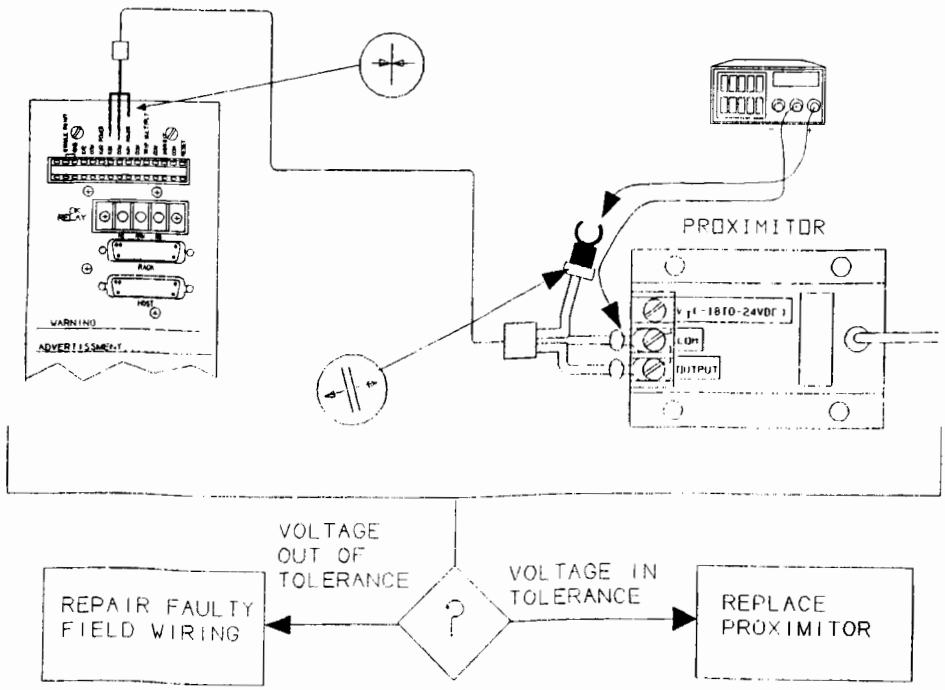
POWER INPUT MODULE

CABLING DEFECTIVE → REPAIR/REPLACE CABLE OR CONNECTION

CABLING OK → REPLACE SYSTEM MONITOR

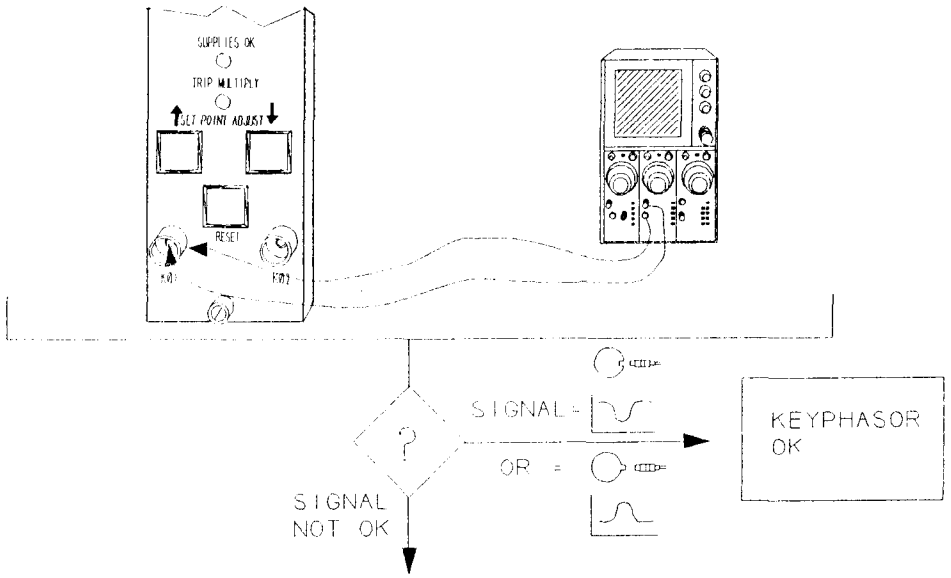
8 KEYPHASOR PERFORMANCE TEST

4. RECONNECT WIRE AT K01 POWER TERMINAL. DISCONNECT WIRE AT -VT (-18 VDC OR -24 VDC) TERMINAL OF PROXIMITOR AND MEASURE VOLTAGE AT WIRE. VOLTAGE SHOULD MEET TOLERANCE LISTED IN STEP 1

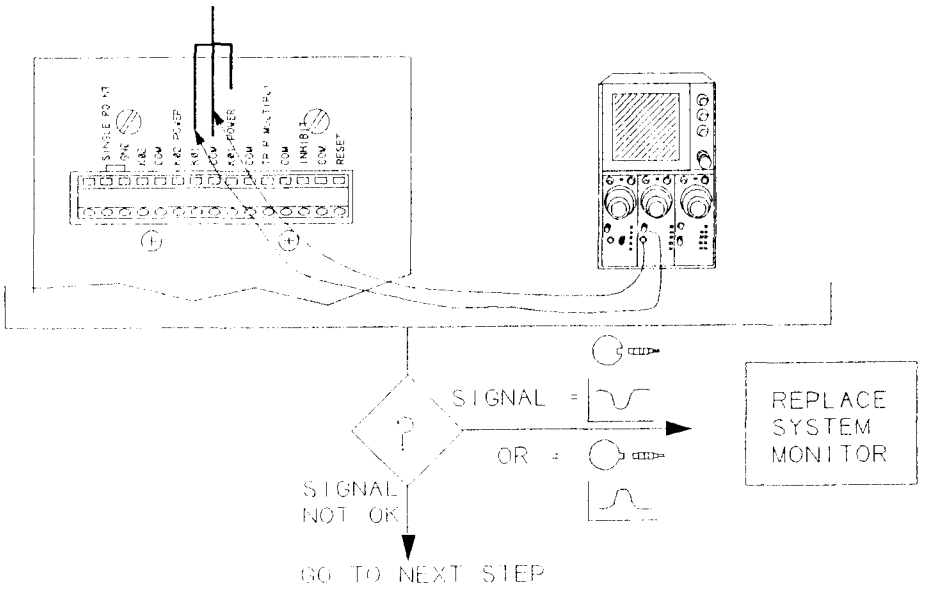


8 KEYPHASOR PERFORMANCE TEST

5. CHECK KEYPHASOR OUTPUT SIGNAL AT SYSTEM MONITOR FRONT PANEL K01 COAXIAL CONNECTOR.

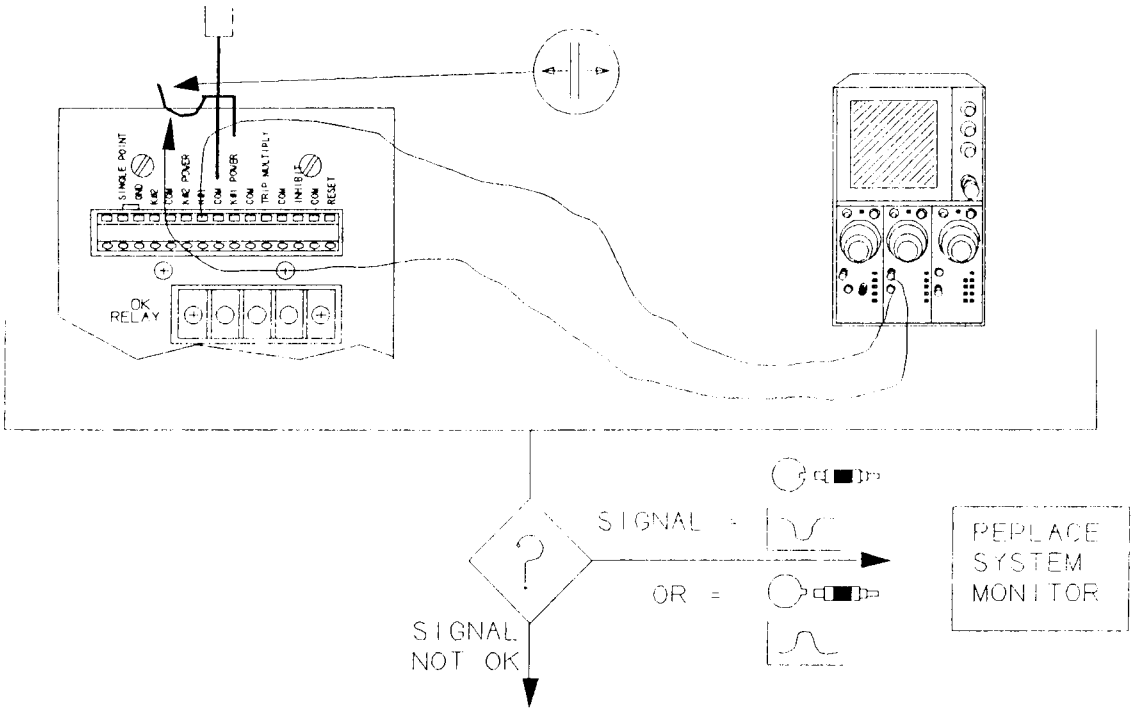


6. CHECK KEYPHASOR SIGNAL AT POWER INPUT MODULE K01 TERMINAL

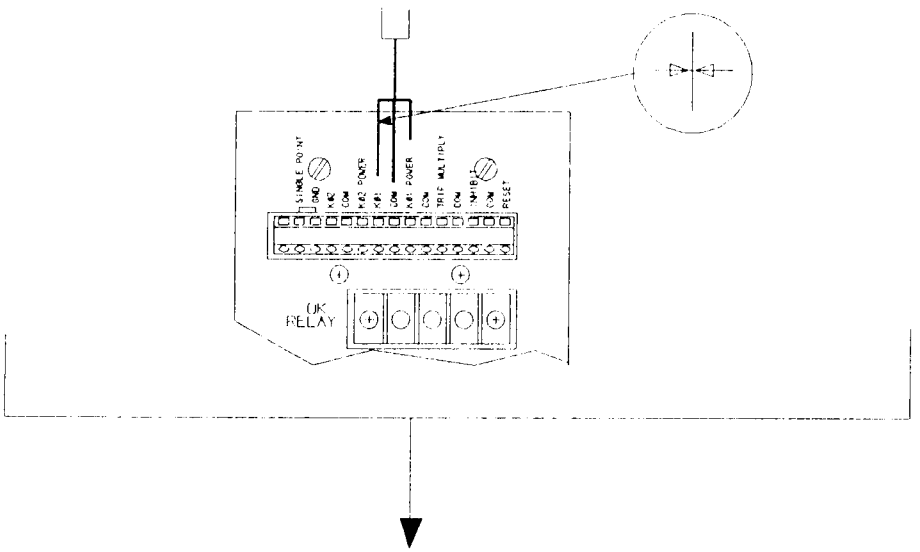


8 KEYPHASOR PERFORMANCE TEST

7. DISCONNECT WIRE AT POWER INPUT MODULE KØ1 TERMINAL AND CHECK WIRE FOR KEYPHASOR SIGNAL



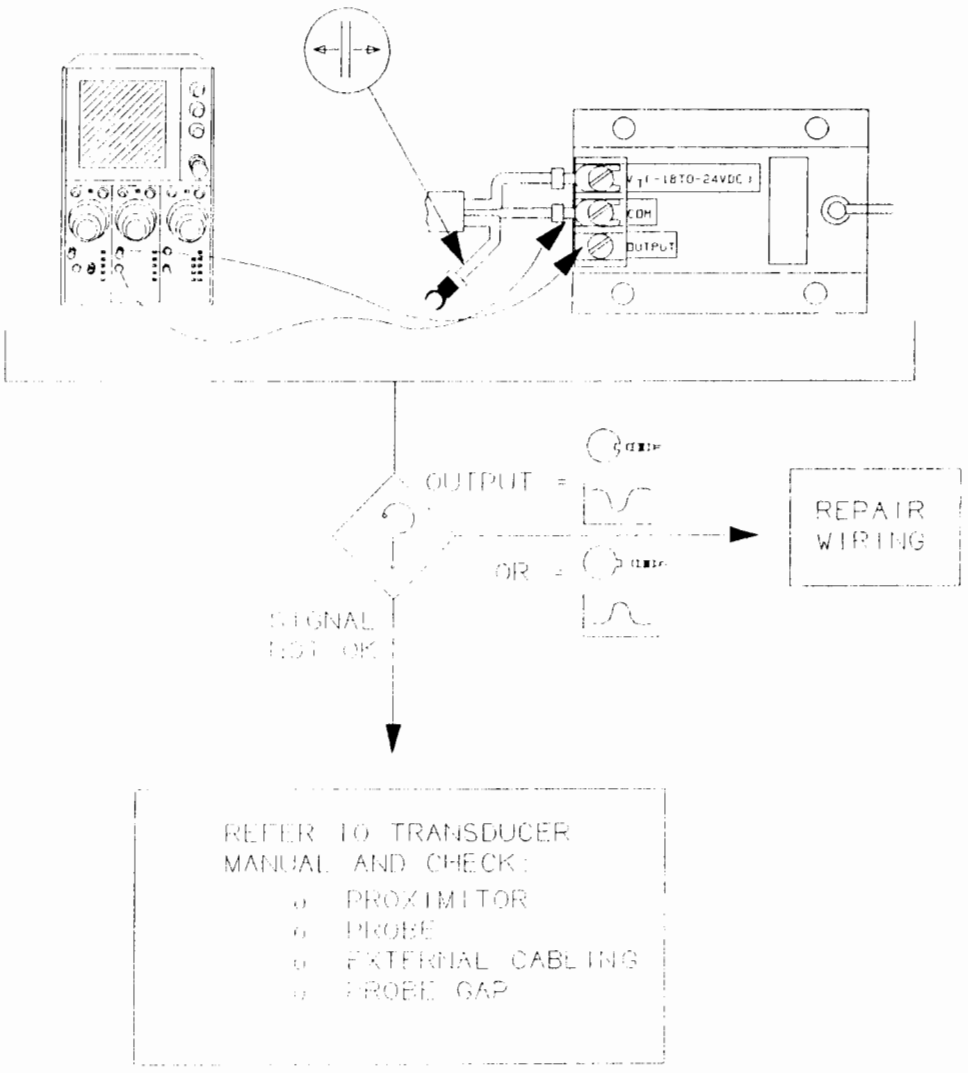
9. RECONNECT WIRE TO POWER INPUT MODULE KØ1 TERMINAL.



GO TO NEXT STEP

8 KEYPHASOR PERFORMANCE TEST

9. DISCONNECT WIRE AT PROXIMITOR OUTPUT TERMINAL AND CHECK SIGNAL AT OUTPUT TERMINAL.



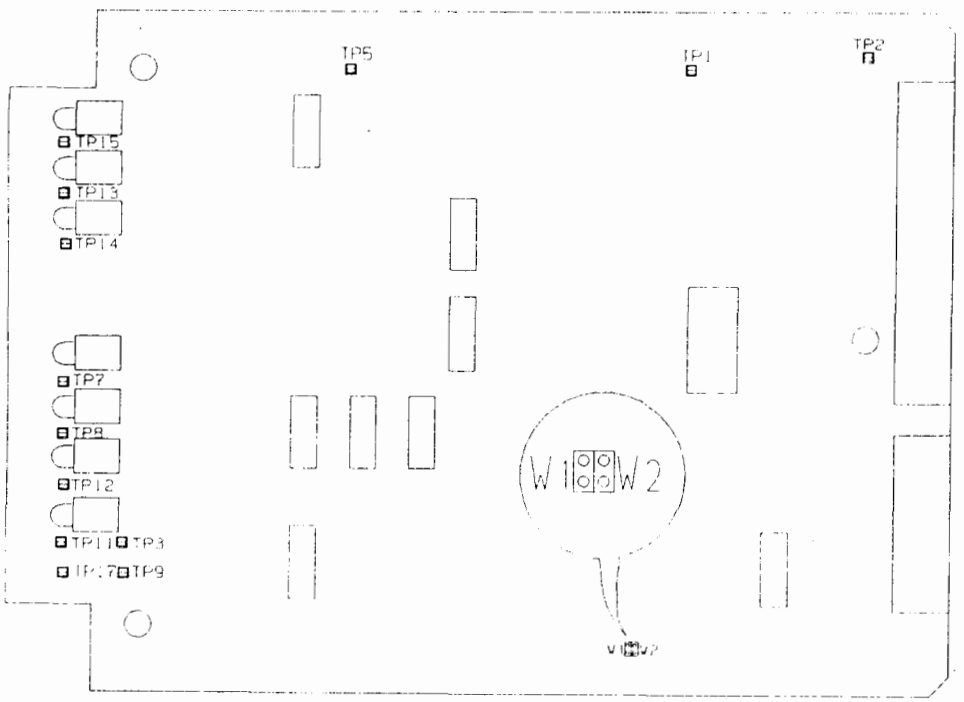
9 $-V_T$ JUMPER CONFIGURATION

TO CHANGE TRANSDUCER VOLTAGE ($-V_T$) ON SYSTEM MONITOR, DISENGAGE FROM RACK (SEE [3]) AND SET JUMPER AS FOLLOWS:

VOLTAGE $-V_T$	JUMPER
-24 VDC	W1
-18 VDC	W2

NOTE

THIS VOLTAGE OPTION MUST CONFORM WITH $-V_T$ SET IN POWER SUPPLY FOR SUPPLIES OK LED TO OPERATE.



10 RECOMMENDED SPARE PARTS

DESCRIPTION	PART NUMBER
System Monitor	3300/01-XX XX = 01 without Serial Interface XX = 02 with Serial Interface
System Monitor PWA	84030-01
Serial Interface PWA	83989-01
System Monitor front panel	78452-01

11 SPECIFICATIONS

INPUT SUPPLY

No external loads, normal operation mode, 25°C

Supply	Voltage
+VRH	22.55 ± 6.05 Vdc
+VRL	11.22 ± 3.09 Vdc
+7.5V	7.5 ± 0.1 Vdc
+5V	5.00 ± 0.05 Vdc
+5V REF	5.00 ± 0.009 Vdc
-7.5V	-7.5 ± 0.1 Vdc
-VT (-24V Option)	-23.75 ± 0.45 Vdc
-VT (-18V Option)	-17.9 ± 0.4 Vdc

SYSTEM POWER-UP INHIBIT

Delay	2.1 ± 1 seconds

CONTACT CLOSURE RATING

Contacts for System Reset, Inhibit, and Trip Multiply

Active	<100Ω

KEYPHASOR

Output Voltage (-24V Option)	-23.2V to -24.2V, Short-circuit Protected
Output Voltage (-18V Option)	-17.4V to -18.3V, Short-circuit Protected

ENVIRONMENTAL

Operating Temperature	+32°F to +149°F (0°C to +65°C)
Storage Temperature	-40°F to +185°F (-40°C to +85°C)
Humidity	95%, noncondensing