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TECHNICAL MANUAL

OPERATION AND MAINTENANCE INSTRUCTIONS
CIRCUIT DIAGRAMS AND ILLUSTRATED PARTS BREAKDOWN
ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

COMMON ALARM

PART NO. 90397028-001

STELMA, INC.
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INTRODUCTION

The information in this technical manual pertains to Common Alarm, Stelma Part Number 90397028-001. Unless otherwise specified, the data presented herein are applicable only to the Common Alarm. The equipment is used to monitor up to 24 remotely located circuits to provide audible and visual alarm indication of circuit failure.

This technical manual provides information for operating and maintenance personnel, and is divided into eight chapters as follows:

Chapter 1, General Information, defines the purpose of the equipment and provides a brief description of, and pertinent data for, the equipment.

Chapter 2, Installation, contains procedures for unpacking and installing the equipment.

Chapter 3, Preparation for Use and Reshipment, provides procedures for initializing the equipment prior to making it operational and preparing it for reshipment.

Chapter 4, Operation, contains descriptions of controls and indicators, operating instructions, and emergency operation.

Chapter 5, Theory of Operation, describes the functional operation of the equipment and provides a description of its electronic circuits.

Chapter 6, Maintenance, contains performance test data, and servicing information.

Chapter 7, Circuit Diagrams, contains block diagrams, wiring diagrams, and schematic diagrams.

Chapter 8, Illustrated Parts Breakdown, contains parts lists and illustrations of all replaceable components, assemblies, and parts.

The following specifications were used in preparation of this manual:

MIL-M-38798A	Manuals, Technical: Operation Instructions, Circuit Diagrams, Alignment Procedures, and Installation Planning

MIL-M-38784A	Manuals, Technical: General Style and Format Requirements
MIL-STD-12	Abbreviations for Use on Drawings and in Technical Type Publications
ASA Y32.16	Electrical and Electronic Reference Designations
MIL-P-38790	Printing Production of Technical Manuals: General Requirements for
MIL-M-38807	Manuals, Technical: Illustrated Parts Breakdowns; Preparation of

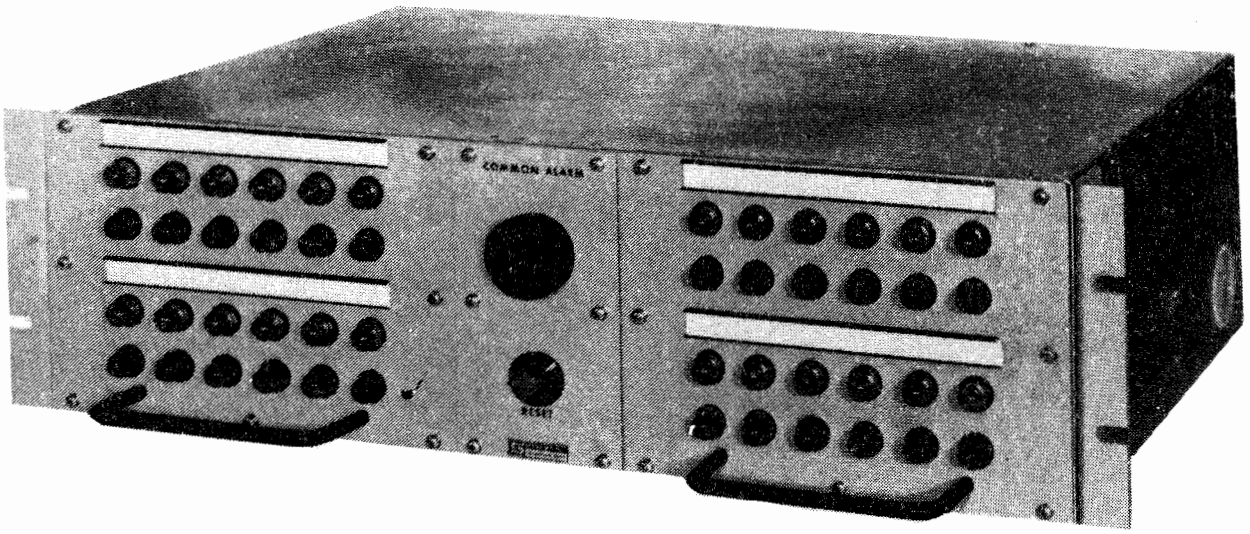

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Figure 1-1. Common Alarm

CHAPTER 1

GENERAL INFORMATION

1-1. PURPOSE AND USE. The Common Alarm (figure 1-1) monitors up to 24 remotely located circuits and provides the operator with audible and visual indications of circuit failure. A fault in a monitored circuit applies ground potential to an alarm input, causing an audible alarm to sound and the red indicator lamp associated with that input to illuminate. Manual resetting of the unit permits continued monitoring of the other channels, turns off the audible alarm, and illuminates the amber indicator lamp associated with the failed circuit. The amber lamp remains illuminated as long as the circuit fault exists and is extinguished only when the fault is corrected. Reset control is exercised locally at the Common Alarm front panel and can also be exercised from a remote location via connection to a terminal strip at the rear of the unit.

1-2. DESCRIPTION.

a. General. The major assemblies of the Common Alarm consist of housing assembly A1, designed to be mounted in a standard 19-inch rack and two identical front panel plug-in common alarm modules A2 and A3 (figure 1-2).

b. Low level housing assembly A1. The housing assembly contains two identical common alarm modules which are mounted through apertures in the front panel and plugged into slotted front-facing retainers at the rear of the unit. The rear of the housing assembly contains three terminal boards TB1, TB2, TB3, through which external signals, including optional remote reset control and input power, are applied. The common alarm/reset panel is mounted on the front of the housing assembly between the two common alarm modules. The panel contains the audible alarm unit which sounds when there is a failure in a monitored circuit, and the RESET switch which resets the Common Alarm after an alert to allow continued monitoring of the other channels.

c. Common alarm modules A2 and A3. Each module houses 3 circuit board assemblies A1, A2, and A3; component board assembly A4; and 24 amber and red indicator lamps arranged in four horizontal rows (2 sets of alternating rows of amber and red) with 6 lamps in each row. Monitored circuits associated with the lamps are identified on panel-mounted strips located directly above each row of amber lamps.

(1) Red indicator lamps DS1-DS6 and DS13-DS18. Illumination of a red lamp indicates a fault in the monitored circuit (channel). When the Common Alarm is reset to permit continued monitoring of the other channels, the illuminated red indicator lamp is extinguished.

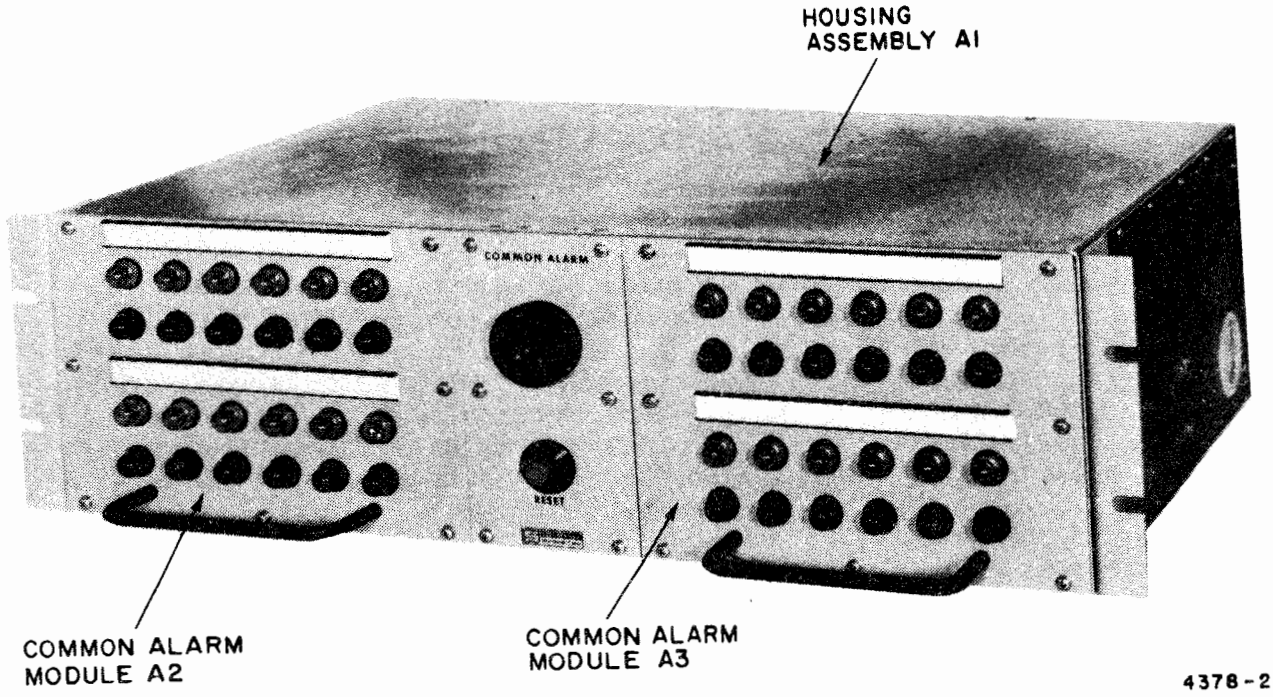


Figure 1-2. Common Alarm, Major Assemblies

(2) Amber indicator lamps (DS7-DS12 and DS19-DS24). Illumination of am amber indicator lamp indicates that a fault exists in a particular channel for which there has been an alarm. When the fault has been rectified, the associated amber indicator lamp is extinguished.

(3) Common alarm circuit boards A1, A2, A3 and component board A4. Each of the three circuit boards monitors four circuits (channels). The three circuit boards plug into component board A4.

1-3. LEADING PARTICULARS. Table 1-1 lists the leading particulars for the Common Alarm.

1-4. CAPABILITIES AND LIMITATIONS. Table 1-2 lists the capabilities and limitations of the Common Alarm.

1-5. EQUIPMENT SUPPLIED. Table 1-3 lists the major assemblies and subassemblies of the Common Alarm and provides a brief functional description of each.

Table 1-1. Leading Particulars

Item	Description
Input power requirements	-48 (±5) volts dc at approximately 2 amperes (under extreme alarm conditions)
Dimensions	19 inches wide by 5-1/4 inches high by 11 inches deep
Weight	20 pounds (approximately)

Table 1-2. Capabilities and Limitations

Item	Description
Operating environment:	
Temperature	0°C to 50°C (32°F to +122°F)
Humidity	Up to 95% at minimum temperature of 38°C (100°F)
Orientation	Inclination at any angle up to 10 degrees from normal position
Storage environment:	
Temperature	-30°C to +60°C (-22°F to +140°F)
Humidity	Up to 95% at minimum temperature of 38°C (100°F)
Orientation	Unpacked storage in any position for period of two years
Number of alarm channels	24
Alarm input requirements:	
Quiescent operation	Open circuit
Alarm operation	Zero volts dc relative to Common Alarm ground reference
Reset control	Locally at Common Alarm front panel and remotely

Table 1-3. Equipment Supplied

Nomenclature	Common name	Qty	Function
Common Alarm, Part No. 90397028-001	Common Alarm	1	Major components are housing assembly and common alarm module. Equipment monitors up to 24 remotely located circuits.
Housing Assembly, A1, Part No. 90397037-001	Housing assembly	1	Provides mounting and electrical connections for audible alarm/reset panel and two plug-in common alarm modules.
Common Alarm Module A2, A3, Part No. 90397036-001	Common alarm	2	Each module contains three circuit board assemblies, which plug into a common component board assembly, and indicator lamps for 12 signal (fault) channels.
Circuit Board Assembly A1, A2, A3, Part No. 80397350-000	Circuit board	6	Part of common alarm module. Plugs into component board assembly. Each circuit board contains components necessary to monitor four signal (fault) channels.
Component Board Assembly A4, Part No. 80397350-000	Component board	1	Part of common alarm module. Circuit boards A1, A2, and A3 plug into this board. Component board consists of three 18-pin connectors and associated mounting hardware.

1-6. SPECIAL TOOLS AND TEST EQUIPMENT. No special tools are required for installation or maintenance of the equipment. Test equipments required for maintenance of the Common Alarm are listed in table 1-4.

Table 1-4. Test Equipment List

Type designation	Alternate Type designation	Figure no.	Nomenclature	Use
AN/PSM-6 (55026)	AN/USM-223	–	Multimeter	DC voltage, continuity, and resistance measurements
Power Supply, Kepco Model SC-60-5 (85604)	–	–	Power Supply	Provides -48 Vdc operating power for bench testing

1-7. RELATED TECHNICAL MANUALS. Table 1-5 lists related technical manuals. For each item listed, the publication number, publication title, and equipment nomenclature are provided.

Table 1-5. Related Technical Manuals

Publication number	Publication title	Equipment nomenclature
T.O. 31W2-4-289-6WC-1	Preventive Maintenance Work Cards - Digital European Backbore Technical Control Equipment	Digital European Backbore Technical Equipment
T.O. 31W-1-06-2	Work Unit Code Manual - Digital European Backbore Technical Control Equipment	Digital European Backbore Technical Control Equipment

CHAPTER 2

INSTALLATION

2-1. INTRODUCTION. This chapter contains applicable information for installation of the Common Alarm. Section I, Installation Logistics, describes receipt, unpacking, and housing of the equipment. Section II, Installation Procedures, describes construction requirements, installation manpower and man-hour requirements, and installation sequences.

Section I. INSTALLATION LOGISTICS

2-2. RECEIVING DATA.

a. Equipment packaging data are supplied in table 2-1. When not shipped as part of a cabinet or rack, the Common Alarm is wrapped in greaseproof, waterproof covering, and shipped from the factory in fiber-board boxes prepared with cellulosic cushioning material.

b. The box in which the Common Alarm is packed serves as a shipping container. The box is small and light enough to be hand-carried; for overall weight and balance, refer to table 2-1.

WARNING

Care should be taken when moving electronic equipment to avoid severe shock or jarring of equipment.

2-3. UNLOADING AND UNPACKING. Unpack and check each Common Alarm. Save all packing material and lists for use in the event of reshipment of the equipment.

NOTE

If the equipment is damaged or incomplete, fill out and forward DD Form 6 (Report of Damage or Improper Shipment) as prescribed in AFM 75-34.

Table 2-1. Equipment Packaging

Item	Dimensions (inches)		Weight (pounds)	
	Unpacked	Packed	Unpacked	Packed
Common Alarm Module	5-1/4 high by 19 wide by 12-1/2 deep (includes handles mounted on front)		20	

Section II. INSTALLATION PROCEDURES

2-4. CONSTRUCTION REQUIREMENTS. Since the Common Alarm is installed in fixed cabinet shelf locations, construction requirements are not included in this manual.

2-5. INSTALLATION MANPOWER AND MANHOUR REQUIREMENTS. Manhours and manpower requirements are listed below for different phases of the installation.

Phase	Manhours	Manpower
Mechanical Installation	0.25	1
Electrical Installation	1	1

2-6. INSTALLATION SEQUENCE. No lubrication or preinstallation adjustments are required. To install the Common Alarm, proceed as follows:

2-7. MECHANICAL INSTALLATION.

a. Place panel in desired mounting position, and align mounting slots in panel with mounting holes in cabinet or rack.

b. While holding panel in desired mounting position, secure it to cabinet or rack with four 10-32 x 1/2 inch mounting screws, No. 10 flat washers, and No. 10 split lockwashers.

2-8. ELECTRICAL INSTALLATION.

a. Make external electrical connections to Common Alarm at terminals blocks TB1 and TB3 located at rear of unit.

b. Figures 6-2 and 7-2 show the location of terminal 6 of TB2, which is used for connection of -48 Vdc power and terminal 5 of TB2 which is used for ground. Terminals 1 through 4 are used to convert remote reset.

2-9. DC POWER CABLE INSTALLATION. Three alternative ground/power source installation configurations are available for the Common Alarm. Configurations 1 and 2 each involve equipments having a common ground. Configuration 1 uses a -48 Vdc equipment power supply (figure 2-1), while configuration 2 uses an external power supply (figure 2-2). Configuration 3 does not use common equipment grounds (figure 2-3). DC power cable installation procedures common to all three configurations are given in paragraphs a and b, which follow.

NOTE

Perform only procedure in paragraph b for configuration 2, where a common equipment ground is present and an external power supply is used.

NOTE

The signal ground return of configuration 3 is provided by one of the two signal cables routed to the remote equipment.

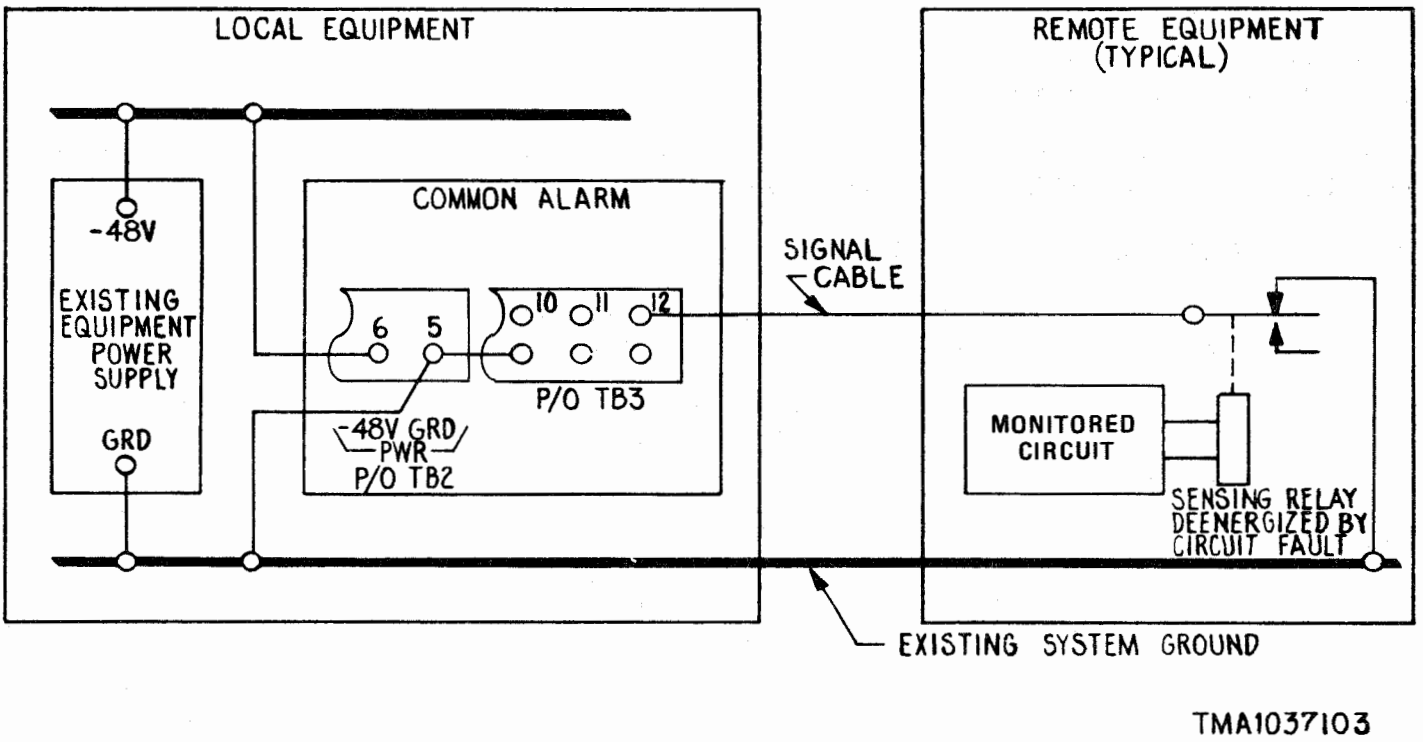


Figure 2-1. Configuration 1, Common Alarm External DC Power and Signal Wiring using Existing Equipment Power Supply and System Ground

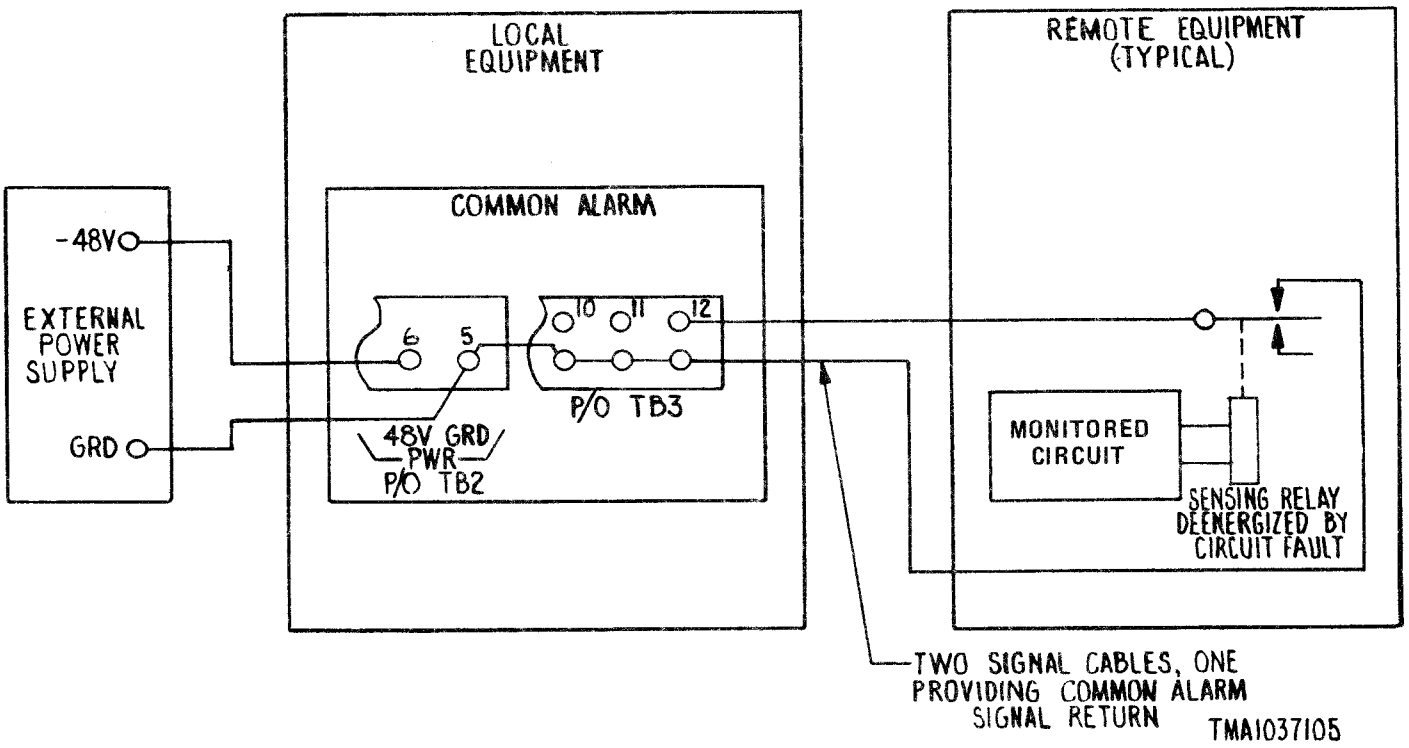


Figure 2-2. Configuration 2, Common Alarm External DC Power and Signal Wiring, using External Power Supply and System Ground

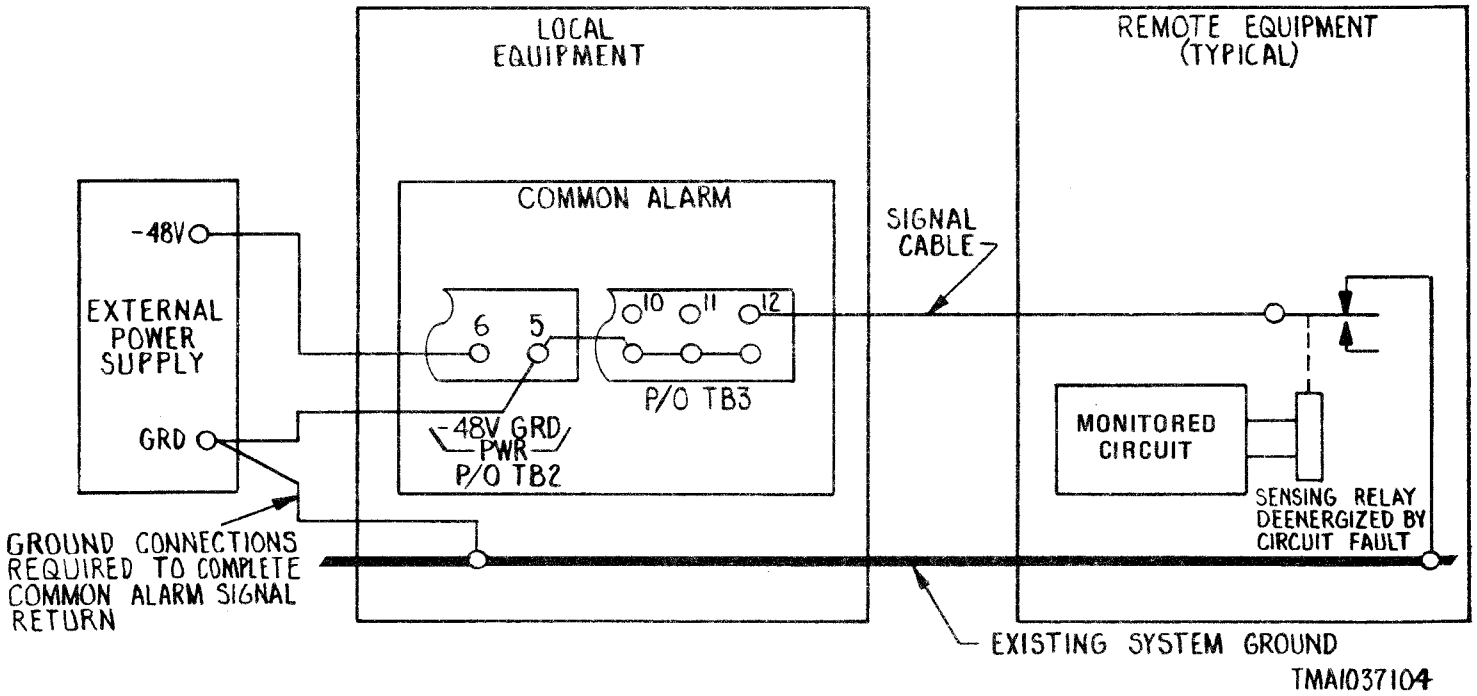


Figure 2-3. Configuration 3, Common Alarm External DC Power and Signal Wiring, without a Common System Ground

WARNING

Lock out or place a MAINTENANCE IN PROGRESS tag on power switch to prevent inadvertent energizing of the power circuit.

● To avoid possible shock, make certain that the -48 Vdc power source is turned off before performing the following procedures.

a. DC power cable installation procedure for configurations 1 and 3. Two dc power cables for the Common Alarm, No. 18 AWG solid-conductor wire, are run in either side of the housing assembly at the rear of the unit. With dc power turned off, install power cables as follows:

(1) Remove 14 screws securing rear panel to housing assembly. Remote rear panel.

(2) Knock out hole in appropriate side of housing assembly.

(3) Connect dc power cables to source. Run dc power cables into housing assembly.

(4) Strip approximately 3/4-inch of insulation from dc power cables.

(5) Loosen screw at TB2-6, wrap bare end of hot side under screw head, and tighten screw.

(6) Loosen screw at TB2-5, wrap bare end of ground side under screw head, and tighten screw.

b. DC power cable installation procedure for configuration 2. Connect the power supply ground terminal to the system ground using No. 18 AWG solid-conductor wire.

2-10. SIGNAL CABLE INSTALLATION. The No. 22 AWG solid-conductor wire signal cables for the Common Alarm are terminated at the housing assembly. One or two signal cables per alarm channel are required, depending upon whether or not the local and remote (monitored) equipments have a common ground system. If a common ground system is present (configurations 1 and 2), only one signal cable is required since the ground system serves as signal return. If no common ground system is present (configuration 3), two signal cables are required. The second cable provides signal return. The sensing relay, shown in figures 2-1 through 2-3, illustrates a typical monitoring method as well as the signal requirements of the Common Alarm. The sensing relay may be part of the monitored circuit.

CHAPTER 3

PREPARATION FOR USE AND RESHIPMENT

3-1. INTRODUCTION. This chapter contains information applicable to preparation for use of the Common Alarm. Section I gives the tests and adjustments required to be performed prior to equipment use. Section II describes preparation for reshipment.

Section I. PREPARATION FOR USE

3-2. GENERAL. Once the equipment has been installed and electrically connected in the cabinet, the performance test checks of paragraph 6-8 must be performed.

Section II. PREPARATION FOR RESHIPMENT

3-3. SPECIAL INSTRUCTIONS. To prepare the Common Alarm for reshipment, perform the following:

a. Remove equipment from cabinet.

b. Pack in original shipping cartons, if available, or an equivalent substitute.

c. A desiccant agent (dehydrating agent per MIL-D-9394) should be used in equipment carton (instead of water-vapor-proof barriers) when it is prepared for shipment or storage.

CHAPTER 4

OPERATION

4-1. INTRODUCTION. This chapter contains operating information applicable to the Common Alarm. Section I describes and illustrates the operating controls and indicators. Section II describes the operation of those controls. Section III, Emergency Operation, is not applicable. When installed and connected as described in Chapter 2, operation of the Common Alarm is automatic. Operator attention is required only to silence the audible alarm, with the RESET switch, when a fault is detected.

Section I. CONTROLS AND INDICATORS

4-2. GENERAL. Controls and indicators for the Common Alarm are listed in table 4-1 and illustrated in figure 4-1. The indicators for common alarm modules A1 and A2 are identical.

Table 4-1. Common Alarm, Controls and Indicators

Name	Ref des	Function
Amber indicator lamps	DS1-DS6 and DS13-DS18	Illuminates following unit reset to indicate presence of fault.
Red indicator lamps	DS7-DS12 and DS19-DS24	Illuminates to provide initial visual alert to fault.
Audible alarm	A1DS1	Sounds to provide initial audible alert to fault.
RESET switch	A1S1	After initial audible and visual (red) alert, RESET switch is depressed to reset unit and sustain continued monitoring of other channels.

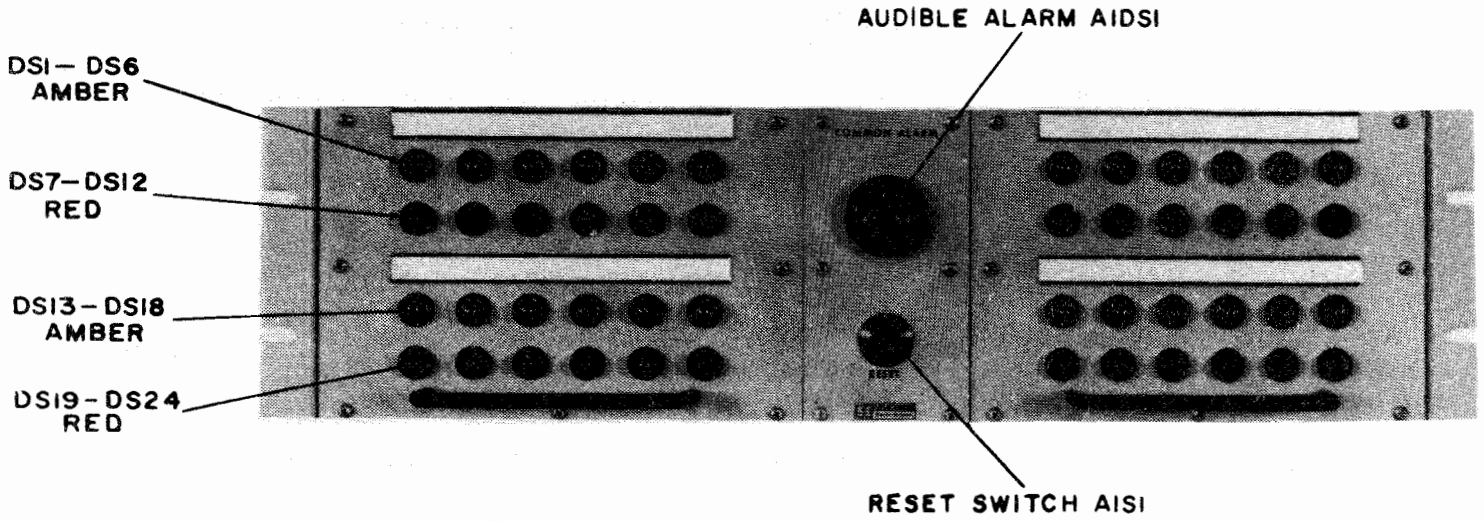


Figure 4-1. Common Alarm, Controls and Indicators

Section II. OPERATING INSTRUCTIONS

NOTE

It is advisable to check the operational status of the monitored circuits prior to activating the Common Alarm. An alarm condition can be indicated by the unit if it is activated prior to activation of the circuits it is monitoring.

4-3. START UP PROCEDURE. To initiate operation of the Common Alarm, proceed as follows:

a. Turn on system power or individual power supply (whichever is used).

b. If alarm condition is indicated, depress RESET switch and observe amber indicator lamps. Illuminated amber indicator lamp signifies fault condition. Amber alarm for any monitored circuit not in operation requires no further action.

c. When all monitored circuits are known to be powered and operational, continued illumination of amber indicator lamp indicates valid circuit fault.

4-4. OPERATING PROCEDURE. When all monitored circuits are operating normally, the Common Alarm indicator lamps are extinguished and the audible alarm is silent. If a fault occurs in a monitored circuit, the audible alarm will sound and the red indicator lamp associated with the faulty circuit will illuminate. When such an alarm condition occurs, perform the following procedure:

a. Depress RESET switch to cancel alarm condition.

b. Observe that audible alarm goes off and red indicator lamp is extinguished.

c. Observe that amber indicator lamp is illuminated, and remains illuminated as long as fault condition exists.

d. Observe that when fault has been corrected, amber indicator lamp is extinguished.

4-5. SHUTDOWN PROCEDURE. To shut down the Common Alarm, simply turn off the system power or individual power supply, whichever is applicable.

Section III. EMERGENCY OPERATION

(Not Applicable)

CHAPTER 5

THEORY OF OPERATION

5-1. INTRODUCTION. This chapter contains the theory of operation of the Common Alarm. Section I provides a functional description of system operation. Section II provides a description of the functional operation of electronic circuits. Section III, Functional Operation of Mechanical Assemblies, is not applicable.

Section I. FUNCTIONAL SYSTEM OPERATION

5-2. GENERAL. The Common Alarm contains 2 identical common alarm modules A1 and A2, each of which has the capability of monitoring up to 12 external circuits. This provides the Common Alarm with a total monitoring capability of 24 circuits, or channels. Each module, in turn, contains three identical circuit board assemblies A1, A2, and A3, which essentially consist of a relay control circuit that controls illumination of the alarm indicator lamps and sounding of the audible alarm (figure 5-1). The system is powered by -48 Vdc from an external power source.

5-3. SIMPLIFIED FUNCTIONAL DESCRIPTION. An alarm input, signifying a circuit failure in a monitored channel, energizes the associated control circuit relay. The relay then activates the associated red indicator lamp and the audible alarm (figure 5-2). Subsequent to the alarm, the operator must reset the unit by depressing the RESET switch on the front panel. This action turns off the red indicator lamp and audible alarm and illuminates the amber indicator lamp. The Common Alarm is then in a reset condition, available to provide an alarm for any other monitored circuit. The illuminated amber indicator lamp remains illuminated until the monitored circuit malfunction is corrected. Power to operate the relays, indicator lamps, and audible alarm is provided by the -48 Vdc external power source.

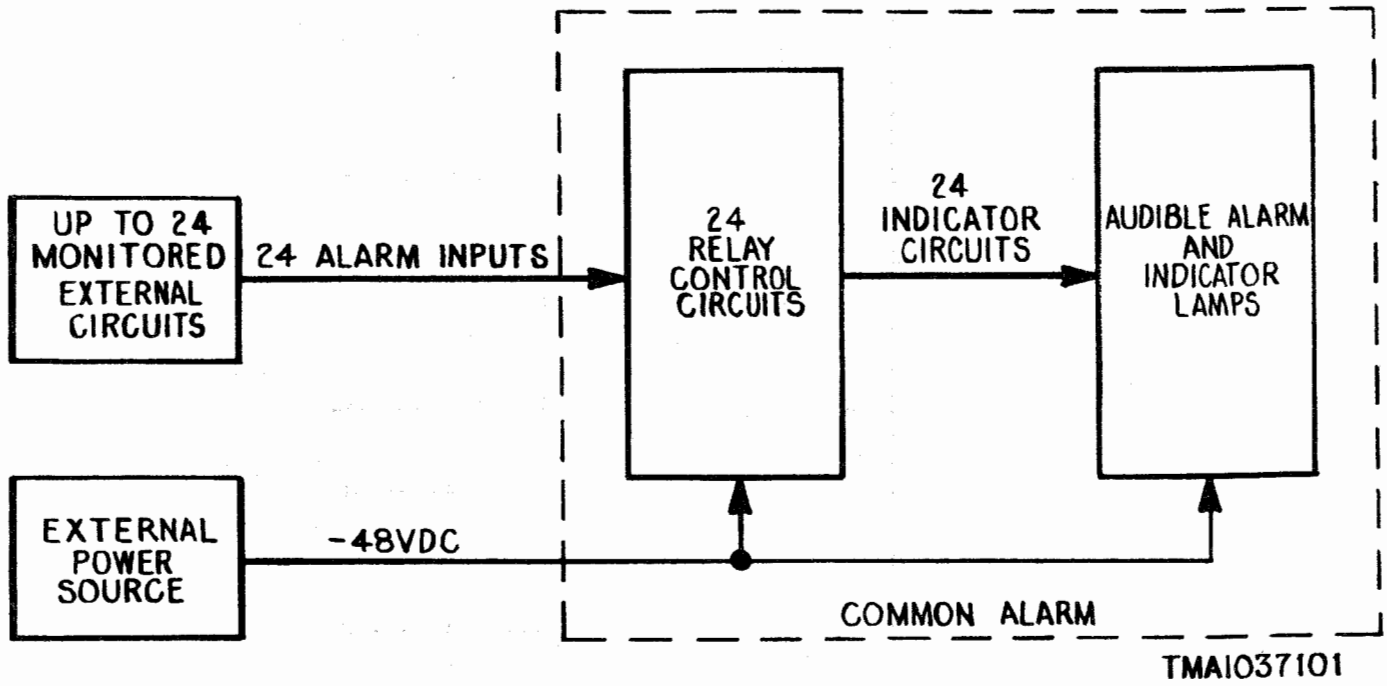


Figure 5-1. Common Alarm, Simplified System Block Diagram

Section II. FUNCTIONAL OPERATION OF ELECTRONIC CIRCUITS

5-4. FUNCTIONAL OPERATION OF CIRCUIT BOARD ASSEMBLIES A1, A2, AND A3.

a. General. The following discussion describes two typical relay control circuits which are part of circuit board assembly A2. The circuit board operation is typical of boards A1, A2, and A3 in common alarm modules A2 and A3. The discussion is supported by a simplified schematic diagram of the two relay circuits (figure 5-3). Other components, shown in figure 5-3, are part of housing assembly A1.

NOTE

Except where stated otherwise, the following description applies to the components associated with alarm input 1. The function described for RESET switch A1S1 and for audible alarm A1DS1 are common to all circuits.

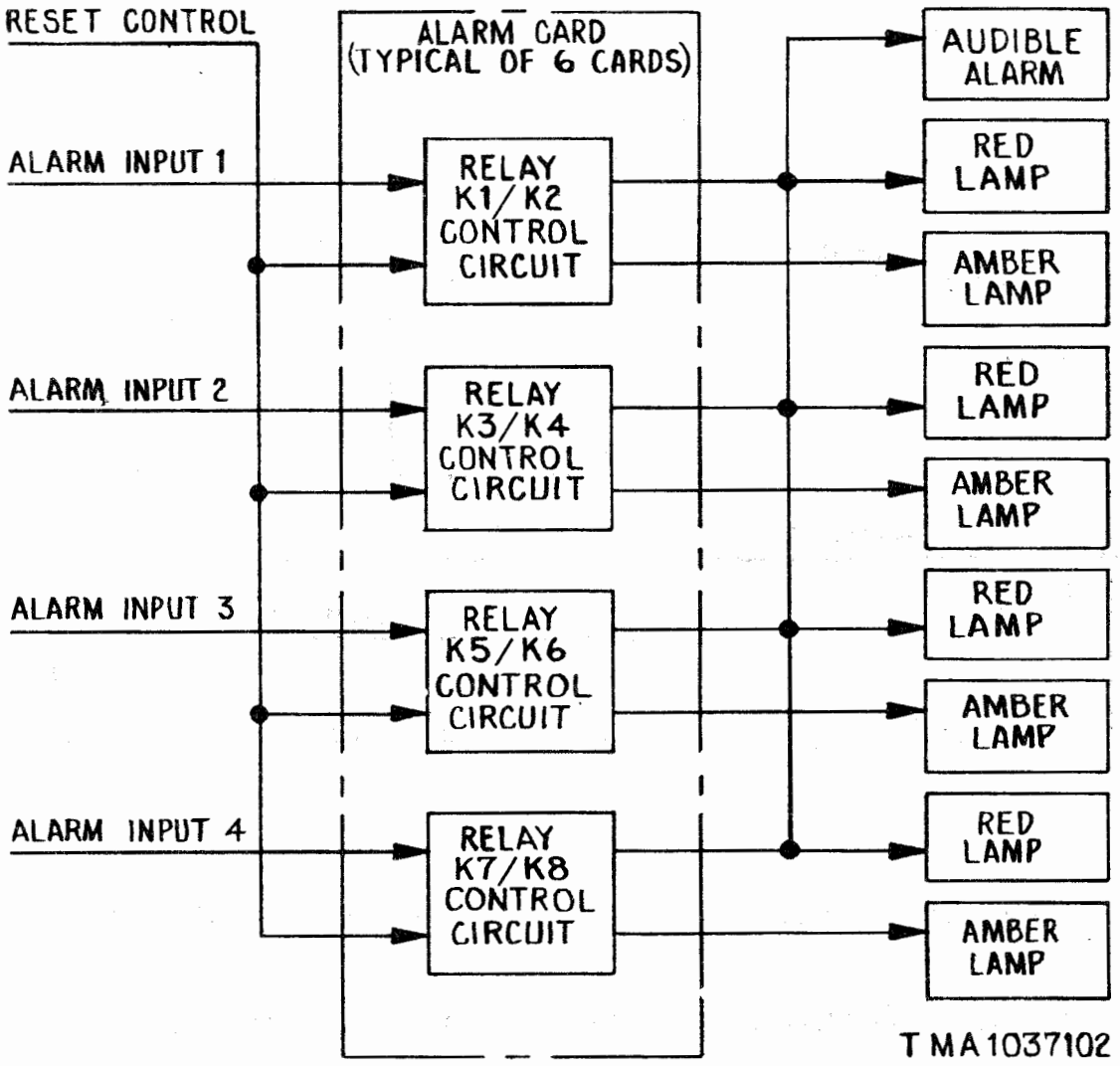
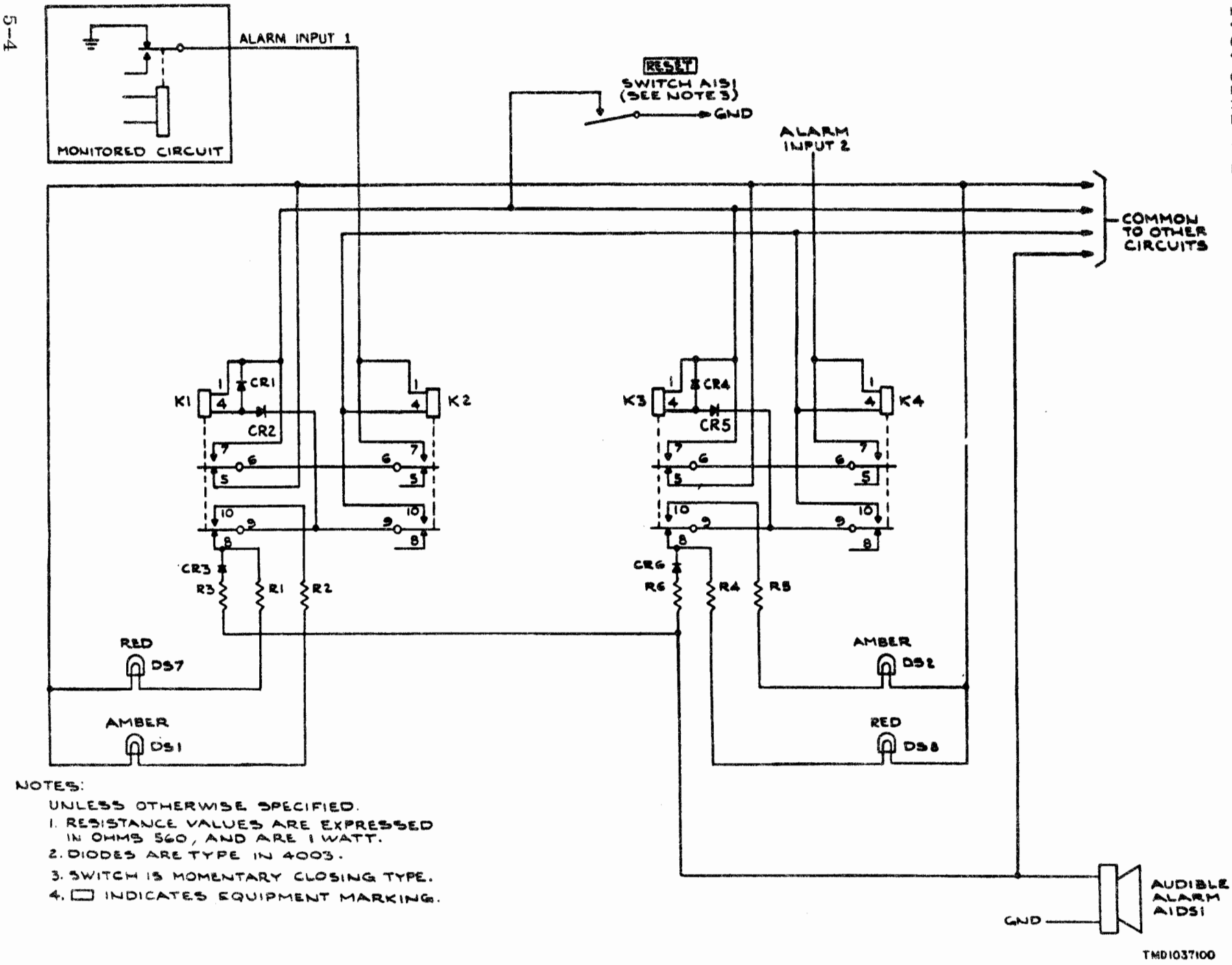


Figure 5-2. Typical Alarm Sequence, Simplified Block Diagram

b. Circuit description. Alarm input 1 (ground) is applied to relay K2 on pin 1. Since pin 4 of relay K2 has -48 Vdc applied to it, relay K2 is energized and its contacts close. This action applies -48 Vdc through pins 9 and 10 of relay K2 and pins 8 and 9 of relay K1, thus illuminating red indicator lamp DS7. The -48 Vdc, applied through diode CR3 and resistor R3, activates audible alarm A1DS1. Diode CR6 blocks the -48 Vdc from red indicator lamp DS8, thus preventing it from illuminating at this time.

(1) With RESET switch A1S1 open, relay K1 remains deenergized while relay K2 is energized. If alarm input 2 detects a fault while channel 1 is in the alarm state (relay K2 energized), relay K4 is energized and red indicator lamp DS8 is illuminated. Since the audible alarm is already sounding, generation of an audible signal for a second fault is not



NOTES:
UNLESS OTHERWISE SPECIFIED.
1. RESISTANCE VALUES ARE EXPRESSED IN OHMS 560, AND ARE 1 WATT.
2. DIODES ARE TYPE IN 4003.
3. SWITCH IS MOMENTARY CLOSING TYPE.
4. ☐ INDICATES EQUIPMENT MARKING.

Figure 5-3. Typical Relay Circuit, Simplified Schematic Diagram

possible. The reset function returns the Common Alarm to the ready state by energizing K1, which then turns off the audible alarm and red indicator lamp DS7, while maintaining an indication of circuit failure by illuminating the associated circuit amber indicator lamp DS1.

(2) Momentarily depressing RESET switch A1S1 applies ground to pin 1 of relay K1. The application of ground, in combination with the -48 Vdc applied to pin 4 of relay K1, causes the relay to energize. This action opens relay K1 contacts 8 and 9 and closes contacts 9 and 10. As a result, red indicator lamp DS7 is extinguished, amber indicator lamp DS1 is illuminated, and the audible alarm is deactivated (by the opening of contacts 8 and 9).

(3) If relay K4 were energized while relays K1, K2, and K3 were deenergized, relay K4, pins 9 and 10, applies -48 Vdc to pin 4 of relay K3, through diode CR5. Diode CR2 blocks the path to ground that would otherwise exist through the coil of relay K3, diode CR1, relay K1 pins 8 and 9, resistor R1, and red indicator lamp DS7. The same blocking function is performed by corresponding diodes in the other relay circuits.

Section III. FUNCTIONAL OPERATION OF MECHANICAL ASSEMBLIES

(Not Applicable)

CHAPTER 6

MAINTENANCE

6-1. INTRODUCTION. This chapter provides maintenance information for the Common Alarm. The level of information is based on the assumption that maintenance personnel have been trained and are familiar with this type of equipment. No special maintenance information is provided for the Common Alarm due to the simplicity of its circuitry. Section I, Organizational and Intermediate Maintenance, provides procedures for isolating faults to an individual component(s). Section II, Special Maintenance, is not applicable. Section III, Performance Test Checks, provides an overall equipment check.

6-2. MAINTENANCE CONCEPT. The performance checks of Section III should be performed at periodic intervals or whenever a malfunction is suspected in the Common Alarm. Once the Common Alarm has been determined faulty, the performance test standards of Section I should be used to localize the malfunction to a replacement part. Replacement of the faulty part is performed at the intermediate maintenance level. Since all preventive and corrective maintenance are the responsibilities of the organizational and intermediate level, overhaul procedures (depot level), normally provided in Section II, are not applicable. Once the unit has been repaired, the performance test checks of Section III should be performed to ensure that the repaired unit meets the required minimum performance standards.

Section I. ORGANIZATIONAL AND INTERMEDIATE MAINTENANCE

6-3. GENERAL. Performance of the Common Alarm should be tested whenever performance degradation is noted or trouble is suspected, and upon completion of repairs. All performance testing should be limited to low-traffic periods to minimize service interruptions.

6-4. MAINTENANCE SUPPORT EQUIPMENT. The only test equipment required for maintenance of the Common Alarm is Multimeter, AN/PSM-6, or equivalent, used for voltage and resistance measurements and Power Supply Model SC-60-5 to provide -48 Vdc. If a particular equipment is not available, an equipment having identical characteristics may be substituted.

6-5. PERFORMANCE TESTS.

a. Performance test points. Table 6-1 lists performance test standards. Table 6-2 lists designated test points. Each point designated in Table 6-2 is brought out to a terminal lug which has its test point number marked directly above it, as shown in figure 6-2.

Table 6-1. Performance Test Standards

Step	Operation of test equipment	Point of test	Control settings and operation of equipment	Performance standards
1	---	---	Remove rear panel of Common Alarm to expose terminal blocks and connect the -48 Vdc power supply to TB2 terminal 5 (+) and 6 (-).	---
2	Short terminal TB1-1 to ground and maintain it until instructed otherwise.	TB1-1 and ground. (All lower terminals on TB1 and TB3 are connected to ground.)	---	Audible alarm should sound and red indicator lamp should turn on.
3	---	Same as step 2.	Depress RESET button.	Audible alarm and red indicator lamp should turn off, and amber indicator lamp should turn on.
4	Remove ground from TB1-1.	Same as step 2.	---	Amber indicator lamp should turn off.
5	Perform steps 2 through 4 at the remaining test points listed in table 6-2.	---	---	Same as steps 2 through 4.
6	---	---	Replace rear panel of Common Alarm.	---

Table 6-2. Performance Test Points

Test point	Location	Function
Circuit 1 - Terminal 1	TB1	Check of DS1/DS7 channel, card A3A2, relay K1/K2
Circuit 2 - Terminal 2	TB1	Check of DS2/DS8 channel, card A3A2, relay K3/K4
Circuit 3 - Terminal 3	TB1	Check of DS3/DS9 channel, card A3A2, relay K5/K6
Circuit 4 - Terminal 4	TB1	Check of DS4/DS10 channel, card A3A2, relay K7/K8
Circuit 5 - Terminal 5	TB1	Check of DS5/DS11 channel, card A3A1, relay K1/K2
Circuit 6 - Terminal 6	TB1	Check of DS6/DS12 channel, card A3A1, relay K3/K4
Circuit 7 - Terminal 7	TB1	Check of DS13/DS19 channel, card A3A1, relay K5/K6
Circuit 8 - Terminal 8	TB1	Check of DS14/DS20 channel, card A3A1, relay K7/K8
Circuit 9 - Terminal 9	TB1	Check of DS15/DS21 channel, card A3A3, relay K1/K2
Circuit 10 - Terminal 10	TB1	Check of DS16/DS22 channel, card A3A3, relay K3/K4
Circuit 11 - Terminal 11	TB1	Check of DS17/DS23 channel, card A3A3, relay K5/K6
Circuit 12 - Terminal 12	TB1	Check of DS18/DS24 channel, card A3A3, relay K7/K8

Table 6-2. Performance Test Points – Continued

Test point	Location	Function
Circuit 13 - Terminal 1	TB3	Check of DS1/DS7 channel, card A2A2, relay K1/K2
Circuit 14 - Terminal 2	TB3	Check of DS2/DS8 channel, card A2A2, relay K3/K4
Circuit 15 - Terminal 3	TB3	Check of DS3/DS9 channel, card A2A2, relay K5/K6
Circuit 16 - Terminal 4	TB3	Check of DS4/DS10 channel, card A2A2, relay K7/K8
Circuit 17 - Terminal 5	TB3	Check of DS5/DS11 channel, card A2A1, relay K1/K2
Circuit 18 - Terminal 6	TB3	Check of DS6/DS12 channel, card A2A1, relay K3/K4
Circuit 19 - Terminal 7	TB3	Check of DS13/DS19 channel, card A2A1, relay K5/K6
Circuit 20 - Terminal 8	TB3	Check of DS14/DS20 channel, card A2A1, relay K7/K8
Circuit 21 - Terminal 9	TB3	Check of DS15/DS21 channel, card A2A3, relay K1/K2
Circuit 22 - Terminal 10	TB3	Check of DS16/DS22 channel, card A2A3, relay K3/K4
Circuit 23 - Terminal 11	TB3	Check of DS17/DS23 channel, card A2A3, relay K5/K6
Circuit 24 - Terminal 12	TB3	Check of DS18/DS24 channel, card A2A3, relay K7/K8

b. Performance test standards. The performance test standards consist of simulating the monitored circuit fault condition by grounding the Common Alarm inputs at terminal boards TB1 and TB3. The function of each test point is to check the corresponding channel assemblies and components listed in table 6-2. See figures 6-1 and 6-2 to locate the controls, indicators, and test points referred to in tables 6-1 and 6-2.

6-6. VOLTAGE REQUIREMENTS AND SOURCES. The Common Alarm requires a source of -48 Vdc power connected to terminal board TB2.

6-7. REPAIR OR REPLACEMENT.

a. Upon removal of the common alarm modules, which is accomplished by removing eight screws that attach each module, all parts are accessible for repair or replacement except the components on the component board assemblies. To remove, proceed as follows:

(1) Remove one screw which secures holddown assembly and remove the assembly.

(2) Carefully lift component board assembly away from module.

b. Refer to Chapter 8, Illustrated Parts Breakdown, for component part identification. All parts are easily removed from the units. When removing and replacing any semiconductor component, such as a diode, use standard precautionary measures (low-wattage soldering iron, heat sink, etc.). Refer to T.O. 00-25-234 for instructions concerning soldering procedures and materials to prevent damage to the components or the component board assemblies.

Section II. SPECIAL MAINTENANCE

(Not Applicable)

Section III. PERFORMANCE TEST CHECKS

6-8. GENERAL. The performance test checks are procedures, which if successfully completed in an operational environment, ensure that the Common Alarm meets minimum performance standards. If any requirement of the performance test checks is not satisfied, refer to the performance test of Section I of this chapter to further isolate the malfunction.

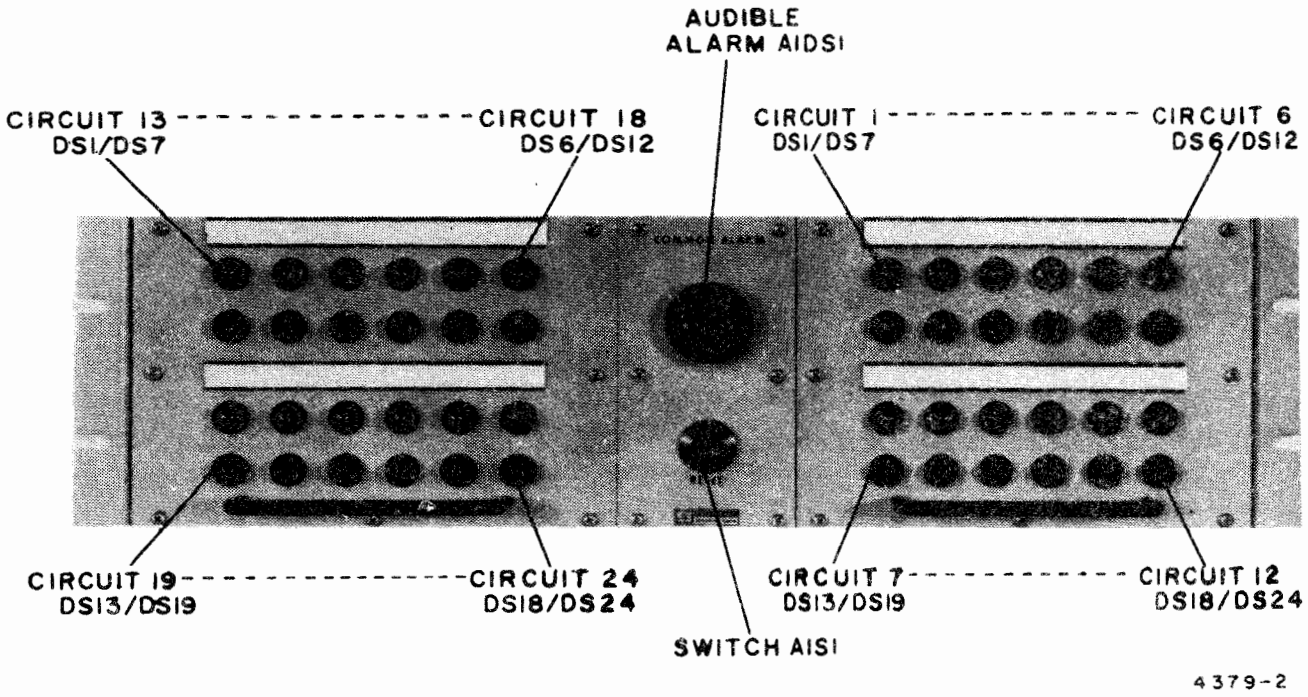


Figure 6-1. Front Panel, Parts Location

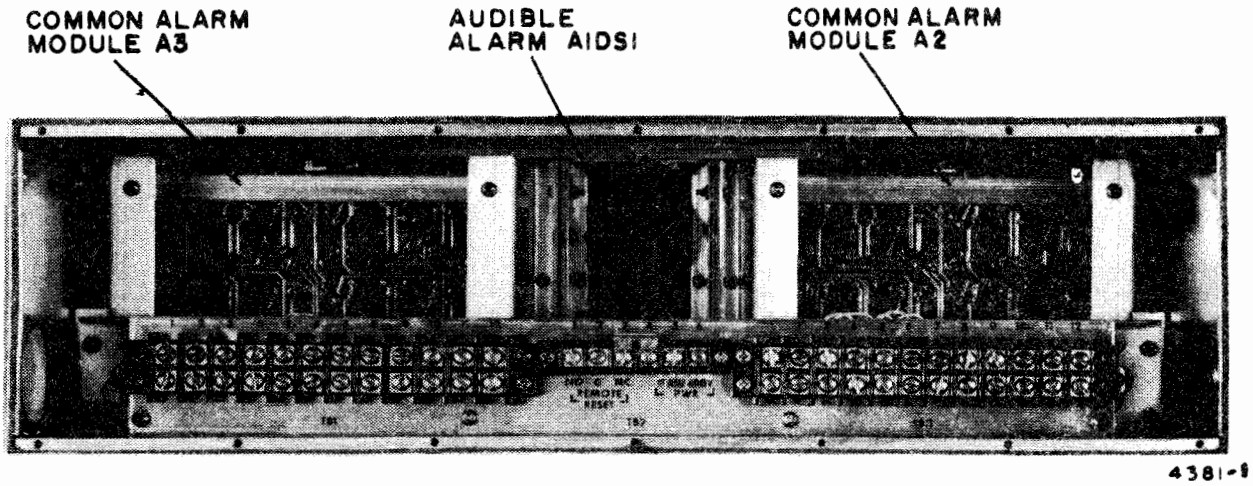


Figure 6-2. Rear Interior View, Parts Location

6-9. PERFORMANCE TEST CHECKS.

a. Remove rear panel of Common Alarm to expose terminal blocks and connect the -48 Vdc power supply to TB2 terminals 5(+) and 6(-).

b. Short terminal TB1-1 to ground and maintain it until instructed otherwise.

NOTE

All lower terminals on TB1 and TB3 are connected to ground.

Observe that audible alarm sounds and red indicator lamp turns on.

c. Depress RESET button. Observe that audible alarm and red indicator lamp turn off and the amber indicator lamp turns on.

d. Remove ground from terminal TB1-1. Observe that the amber indicator lamp turns off.

e. Perform steps 2 through 4 of table 6-2 at the remaining test points.

f. Replace the Common Alarm rear panel.

CHAPTER 7

CIRCUIT DIAGRAMS

7-1. INTRODUCTION. This chapter contains schematic and wiring diagrams for the Common Alarm and a typical system configuration diagram. These diagrams should be used in conjunction with the theory of operation and the performance of maintenance procedures. A list of the diagrams is provided in table 7-1.

Table 7-1. List of Diagrams

Figure no.	Title	Page no.
7-1	Common Alarm, Typical System Configuration	7-2
7-2	Housing Assembly A1, Wiring Diagram	7-3
7-3	Common Alarm Modules A2, A3, Wiring Diagram	7-4
7-4	Component Board Assembly A2A4, A3A4, Wiring Diagram	7-5
7-5	Common Alarm, Schematic Diagram	7-6
7-6	Circuit Board Assembly A2A1, A2A2, A2A3, A3A1, A3A2, A3A3, Schematic Diagram	7-7

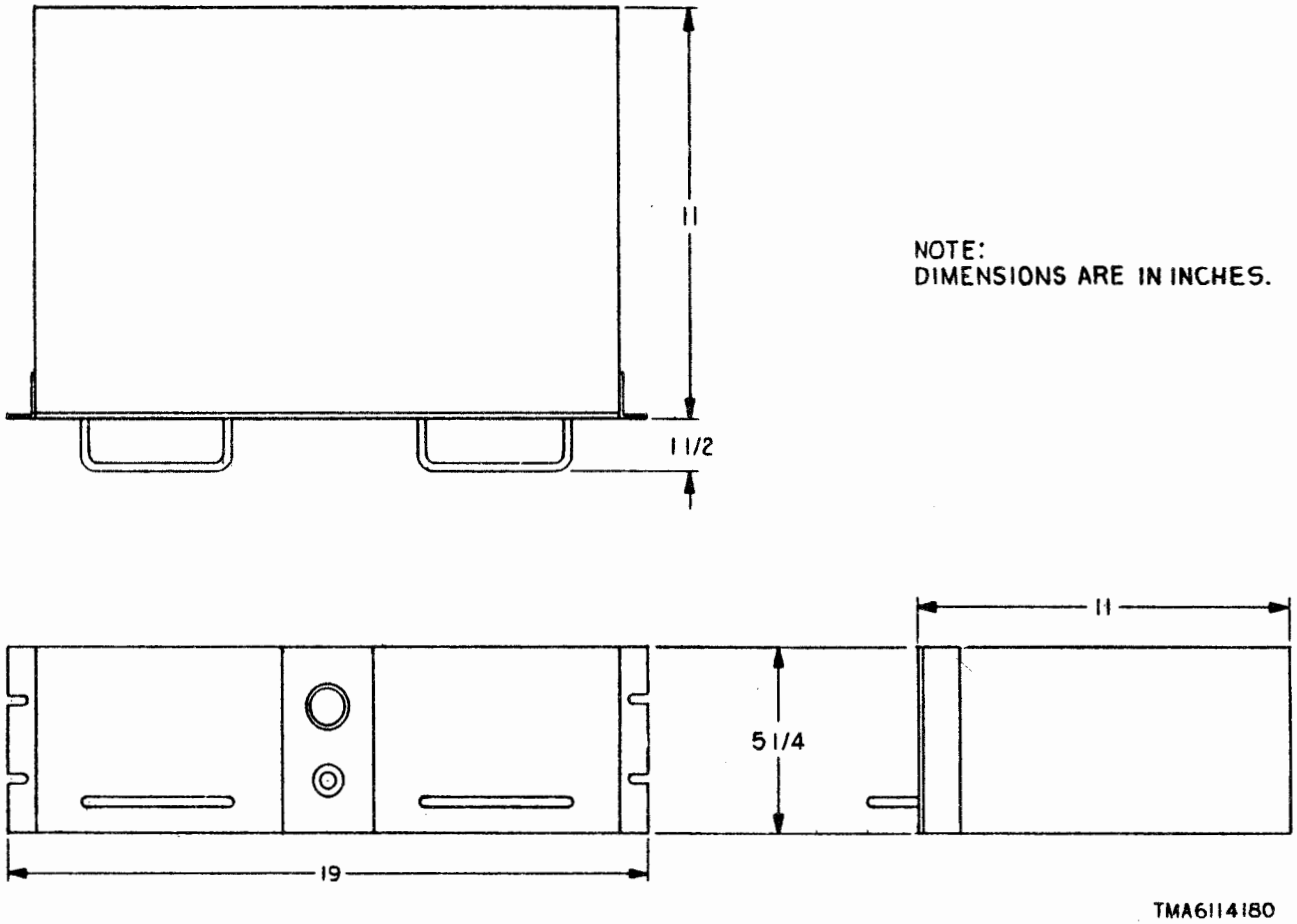
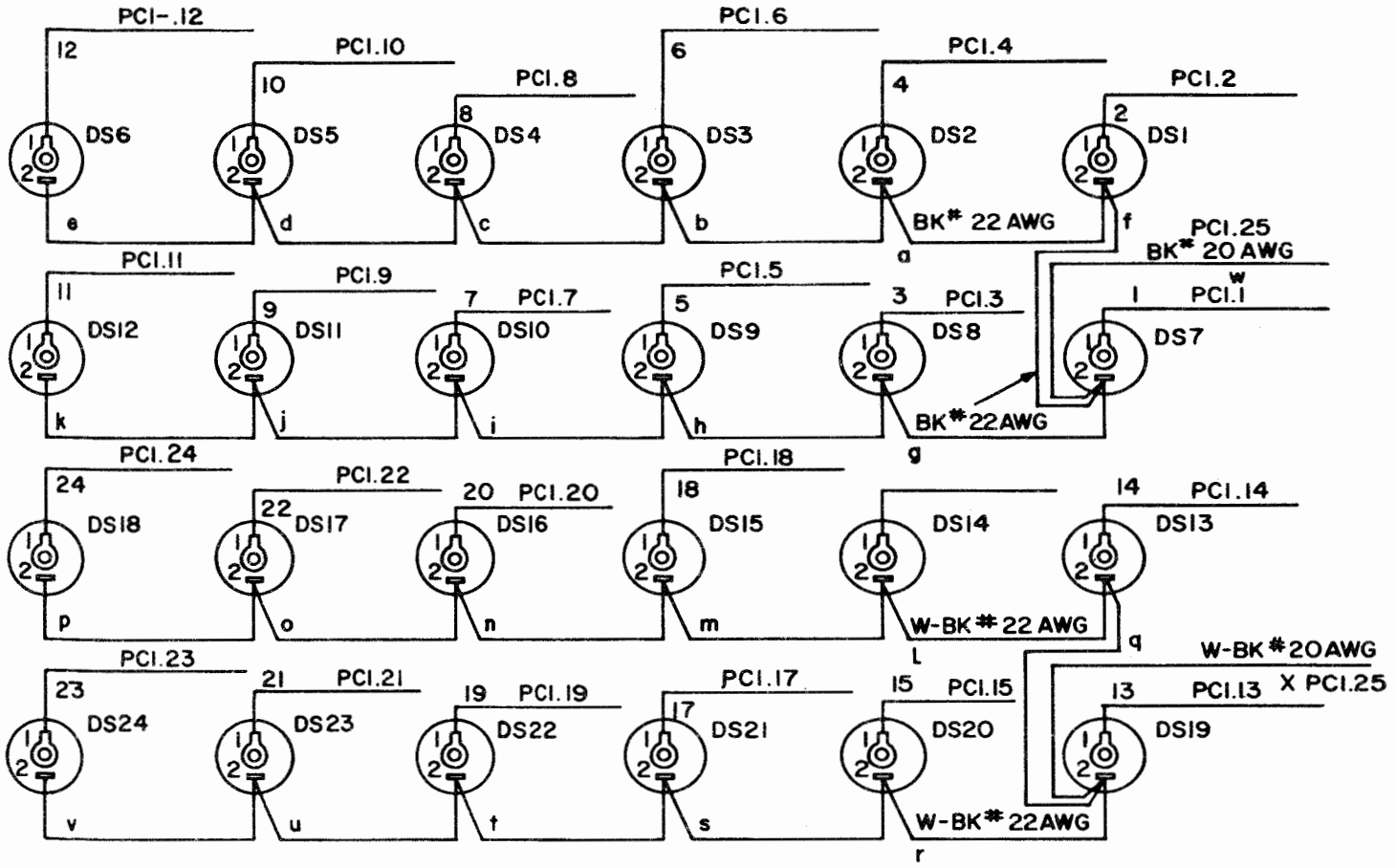
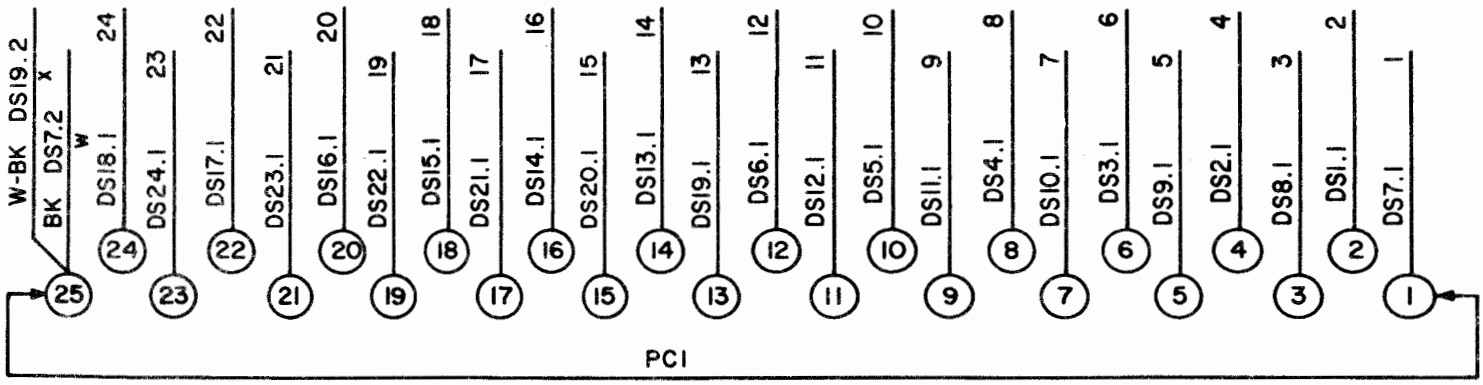


Figure 7-1. Common Alarm, Typical System Configuration

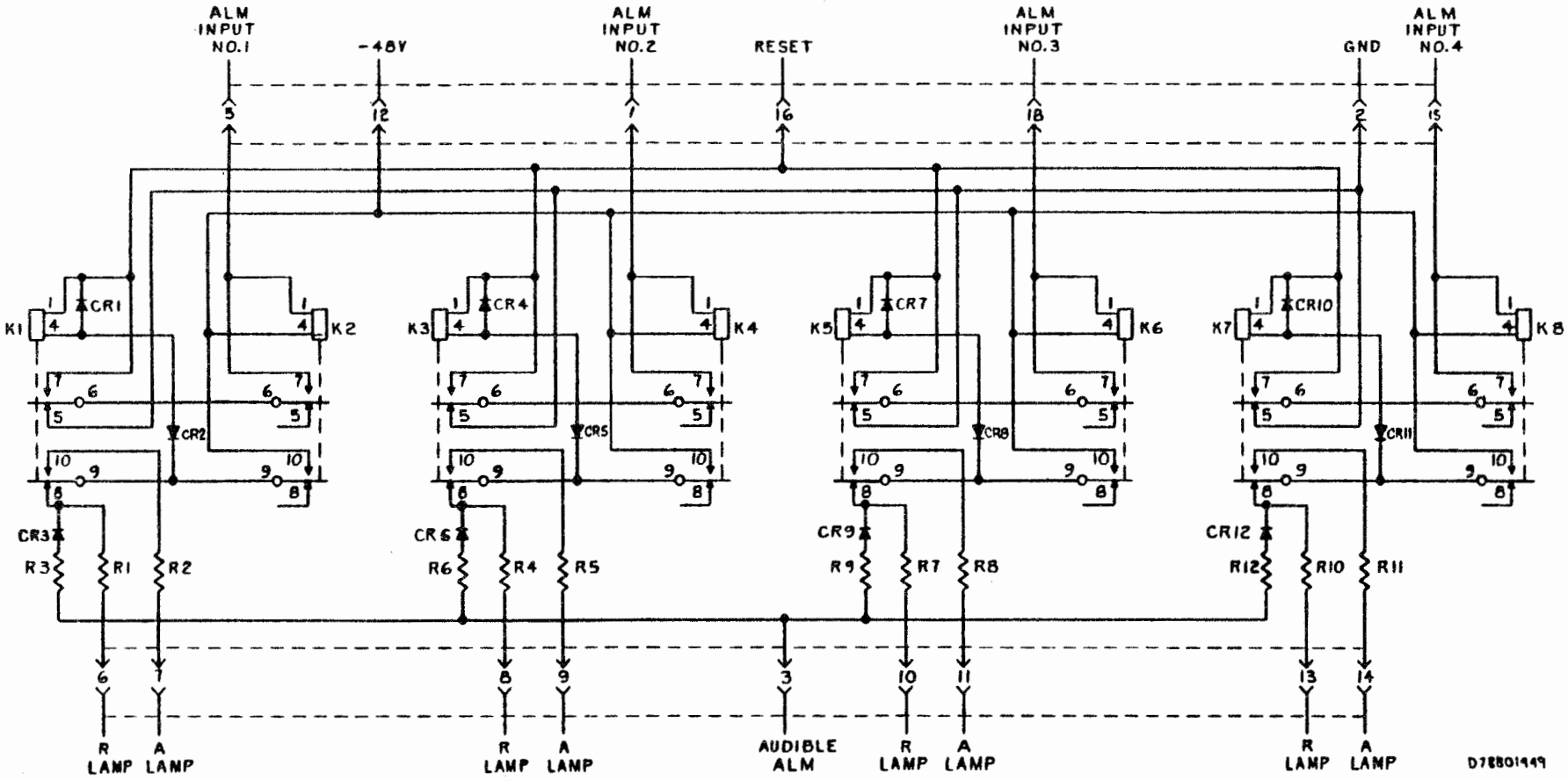




NOTES:
1. ALL WIRES UNCOVERED PLASTIC STR COND AWG #24, 22 AND 20 TYPE "B" PER MIL-W-16878 OR EQUAL.
2. WIRES NO. 1 THRU NO. 24, ARE NUMBERED.

TMB83904006-2

Figure 7-3. Common Alarm Modules A2, A3, Wiring Diagram



NOTES:
UNLESS OTHERWISE SPECIFIED:
1-RESISTANCE VALUES ARE EXPRESSED IN OHMS 560, AND ARE 1 WATT.
2-DIODES ARE TYPE IN4003.

Figure 7-6. Circuit Board Assembly A2A1, A2A2, A2A3, A3A1, A3A2, A3A3, Schematic Diagram

CHAPTER 8

ILLUSTRATED PARTS BREAKDOWN

SUB SECTION A

INTRODUCTION

8-1. GENERAL. This Illustrated Parts Breakdown lists, illustrates, and describes the parts for the Common Alarm, Part Number 90397028-001 as manufactured by Stelma, Inc., Wallingford, Connecticut. The Illustrated Parts Breakdown is to be used when requisitioning, storing, issuing, identifying parts, and to illustrate disassembly and assembly relationships. This chapter consists of two sections which are as follows:

Sub Section A - Introduction

Sub Section B - Maintenance Parts List

8-2. MAINTENANCE PARTS LIST.

a. Purpose. The Maintenance Parts List contains a complete breakdown of the entire unit listed in order of disassembly (where disassembly order is applicable) beginning with the complete unit, main groups, each major assembly, subassemblies, and finally down into detailed parts. Items which are obtained from bulk stock, such as wire, sealing compounds, cement, insulating material, safety wire, etc., are not included in the Maintenance Parts List.

b. Indentions. Each item of the Maintenance Parts List is arranged and indented to show its proper relationship to the unit of which it is a part and to the complete article. Each assembly listed is followed immediately by its component parts properly indented to show their relationship to the assembly. An example of the next higher assembly relationship, indicated by indenture, is as follows:

1 2 3 4 5 6 7

. Assembly

. . Subassembly

. . Detail Part (AP)

. Assembly

. Detail Part (AP)

c. Attaching parts. Attaching parts are listed immediately following the parts they attach and have the same indention. The abbreviation (AP) in parentheses next to the detailed part indicates that it is an attaching part.

d. Figure and index number column. This column contains the figure and index numbers of illustrated items. The index numbers are numerically arranged in the listing and are used to key the assemblies and parts to the figure.

e. Part number. This column lists either the prime manufacturer's part number, AN (Air Force-Navy) standard part numbers, MS (Military Standard) standard part numbers, NAS (Naval Aircraft Standard) standard part numbers, or part numbers of vendors other than the prime manufacturer.

f. Description column. This column lists the name of each assembly, its attaching parts, and the components of the assembly, properly indented to show the relationship to the assembly and to show the relationship of the assembly to the next higher assembly. Parts purchased from vendors other than Stelma, Inc. are so indicated by the vendor's Federal Supply Code enclosed in parentheses after the description of the item. If a Federal Manufacturer Code is not indicated, Stelma is the manufacturer (code 96238). A complete list of Federal Supply Codes used is listed below.

Code	Name and Address
02288	Telemecanique Inc, Plantsville, Conn.
08806	G.E. Miniature Lamp Department, Cleveland, Ohio
37942	P.R. Malory Co. Indianapolis, Ind.
71785	Cinch Mfg. Co. Mt. Vernon, N.Y.
75382	Kulka Electric Corp., Mt. Vernon, N.Y.
81349	MIL Specifications
96906	MIL Standards
96238	Stelma, Inc., Wallingford, Conn.

g. Units per assembly. This column contains the exact quantity of items required for its next higher assembly. (For example, if three dial knob assemblies are used on an electronic unit, and each known assembly breaks down into one knob and two setscrews, the unit per assembly is shown as one knob and two setscrews, the quantity for one knob assembly only.) Items listed for reference purposes only will have the abbreviation REF for reference. Note REF indicates that the quantity is listed in the next higher assembly in the Maintenance Parts List, as indicated in the description column.

h. Usable on code. This column is not applicable.

i. Source, maintenance, and recoverability. Definitions of applicable source, maintenance and recoverability (SMR) codes are set forth in T.O. 00-25-195.

8-3. NUMERICAL INDEX. Numerical Index is not required.

8-4. REFERENCE DESIGNATION INDEX. Reference Designation Index is not required.

8-5. EXPLANATION OF TERMS, ABBREVIATIONS, AND SYMBOLS. The notation (for NHA, see fig.) following the description of a part indicates next higher assembly of that part. The notation (for details, see fig.) following the description indicates that the item and its component parts are shown in detail in the figure indicated. The abbreviations used in this chapter are in accordance with MIL-STD-12 Abbreviations. The following is a list of terms, abbreviations, and symbols used.

(AP)	attaching part
fig.	figure
NHA	next higher assembly
W	watts

SUB SECTION B

MAINTENANCE PARTS LIST

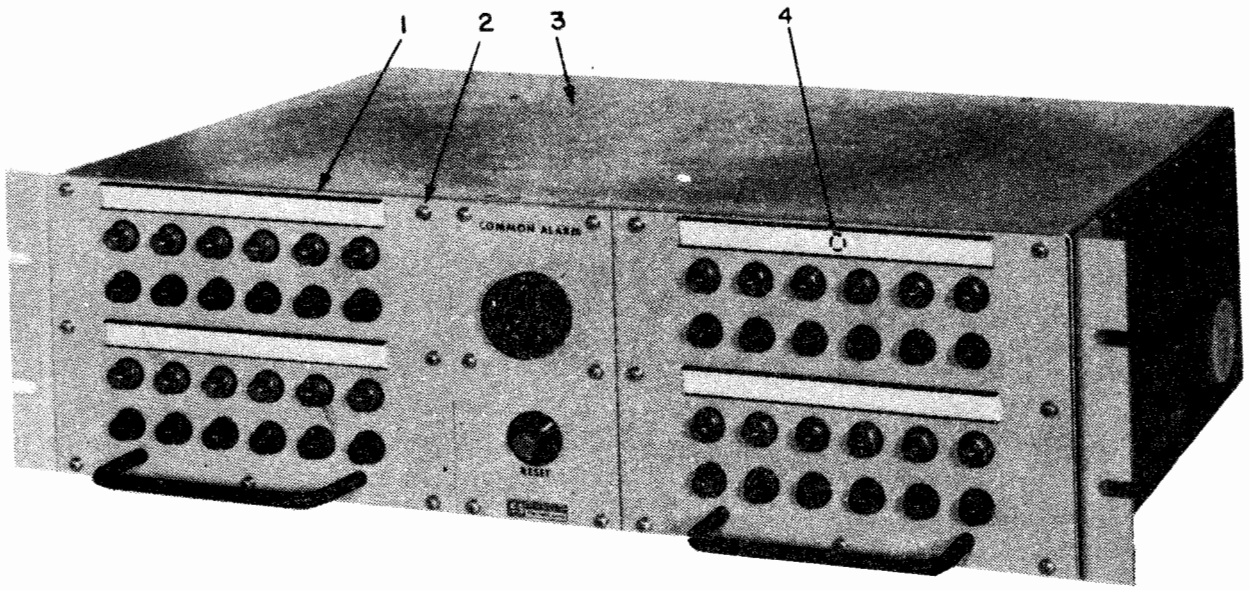


Fig. 8-1. Common Alarm, Part Number 90397028-001

FIG. AND INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SMR CODE
8-1-	90397028-001	COMMON ALARM	1		PBFFD
-1	90397036-001	. COMMON ALARM ..... MODULE (For details, see fig. 8-2)	2		AFFF
-2	MS251957-14	. SCREW (AP)	14		PAFZZ
-3	90397037-001	. HOUSING ASSEMBLY, ... (For details, see fig. 8-4)	1		XAFZZ
-4		. SCREW (FH)	2		PAFZZ

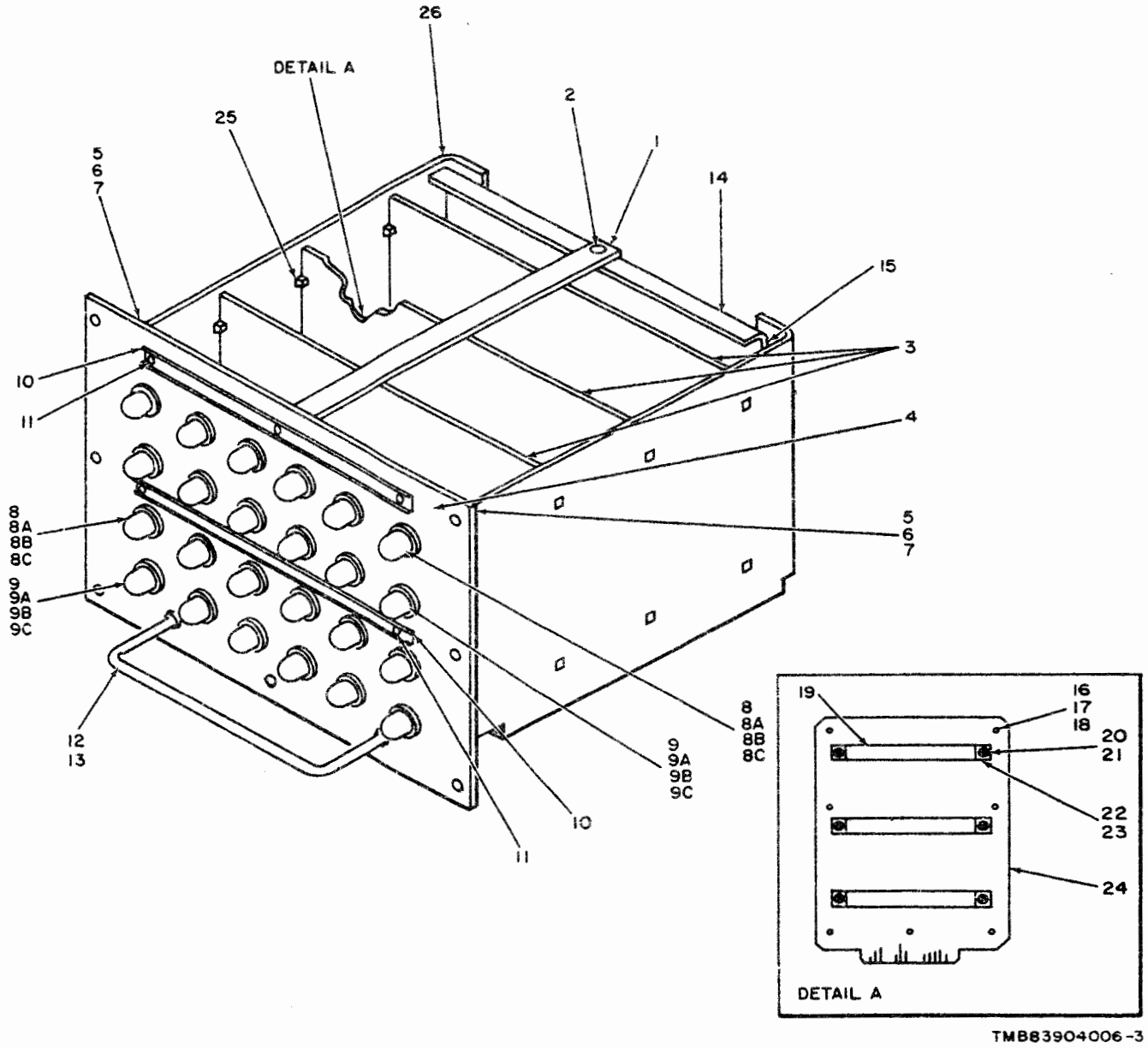


Figure 8-2. Common Alarm Module, Part Number 90397036-001

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SMR CODE
8-2-	90397036-001	COMMON ALARM ..... MODULE (For NHA, see fig. 8-1)	REF		
-1	56025092-000	. RETAINER, Card ...	1		XBFZZ
-2	MS51957-27	. SCREW (AP)	1		PAFZZ
-3	80397350-000	. CIRCUIT CARD ..... ASSEMBLY (For details, see fig. 8-3)	3		PAFFF
-4	61020101-001	. PANEL, Front	1		MFFZZ
-5	MS35649-264	. NUT (AP)	4		PAFZZ
-6	MS35338-136	. WASHER (AP)	4		PAFZZ
-7	MS15795-805	. WASHER (AP)	4		PAFZZ
-8	MS25256-2-327	. LIGHT, Indicator, ... yellow	12		PAFZZ
-8A	LH73-1	. . HOUSING, Indicator light	1		PAFZZ
-8B	MS25237-327	. . LAMP,..... Incandescent	1		PAFZZ
-8C	LC12YN2	. . LENS, Indicator .. light	1		PAFZZ
-9	MS25256-6-327	. LIGHT, Indicator, ... red	12		PAFZZ
-9A	LH73-1	. . HOUSING, Indicator light	1		PAFZZ
-9B	MS25237-327	. . LAMP, ... Incandescent	1		PAFZZ
-9C	LC12RN2	. . LENS, Indicator .. light	1		PAFZZ
-10	57010101-000	. HOLDER, Card ..... label	2		MFFZZ
-11	FFS92TYPE1 STYLE 3	. SCREW, Fh, cr, ... 2-56 x 1-8 (AP)	4		PAFZZ
-12	56025060-001	. HANDLE	1		
-13	MS51957-46	. SCREW (AP)	2		
-14	62021821-000	. SUPPORT..... BRACKET ASSEMBLY	1		MFFZZ

FIG. AND INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SMR CODE
8-2-15	MS51957-30	. SCREW (AP)	2		PAFZZ
	80397310-000	. CIRCUIT CARD ..... ASSEMBLY	1		PAFFF
-16	MS51957-27	. SCREW (AP).....	7		PAFZZ
-17	MS35338-136	. WASHER (AP)	7		PAFZZ
-18	MS15795-805	. WASHER (AP)	7		PAFZZ
-19	252-18-30-240	. . CONNECTOR, ... 18 pin (71785)	3		PAFZZ
-20	MS51957-23	. . SCREW (AP)	6		PAFZZ
-21	MS15795-803	. . WASHER (AP)	12		PAFZZ
-22	MS35338-135	. . WASHER (AP)	6		PAFZZ
-23	MS35649-244	. . NUT (AP)	6		PAFZZ
-24	80397311-000	. . CIRCUIT ..... BOARD ASSEMBLY	1		XAFZZ
-25	61100120-100	. GUIDE, Card	6		MFFZZ
-26	62000480-000	. CHASSIS ..... ASSEMBLY	1		XBFZZ

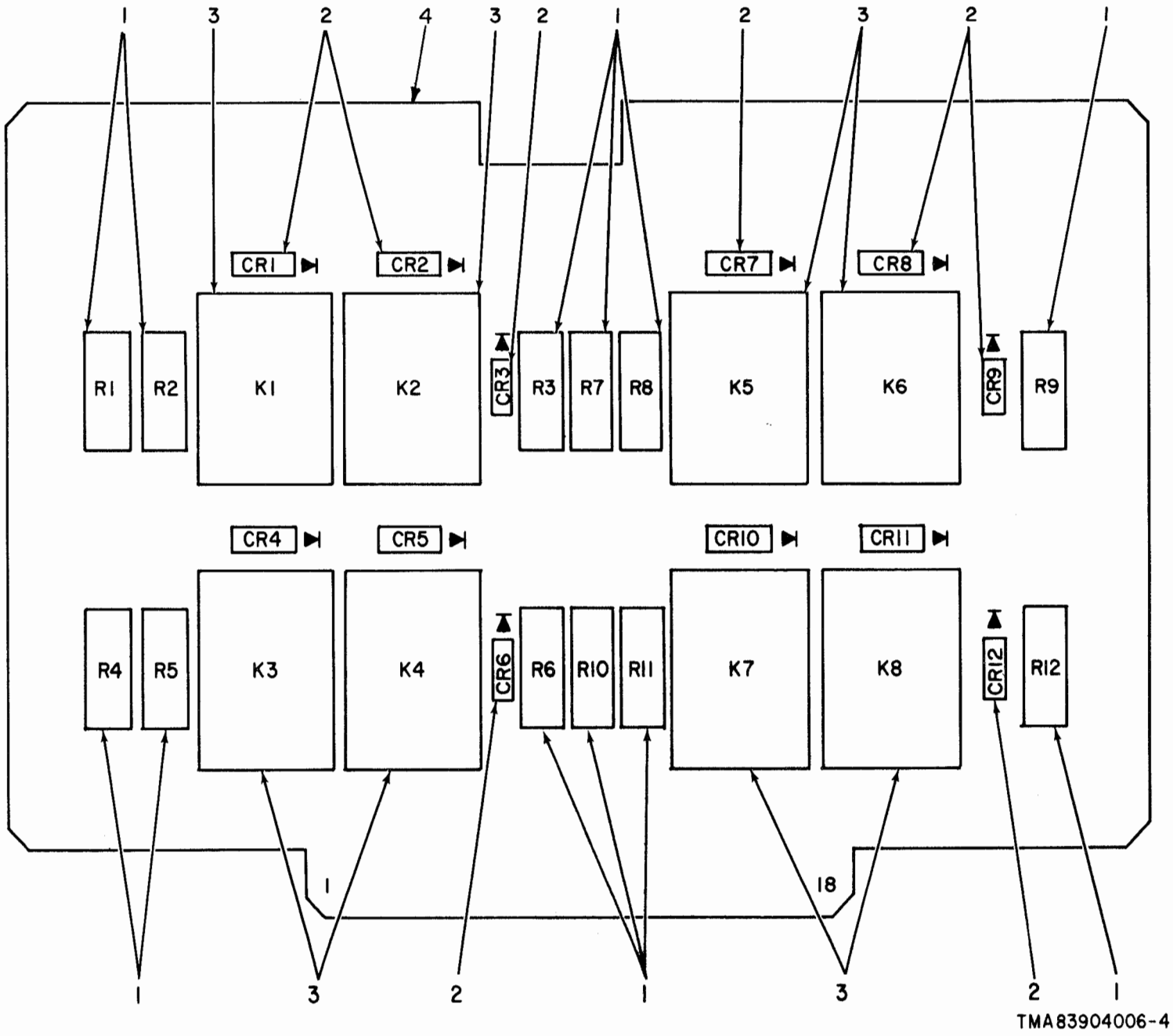
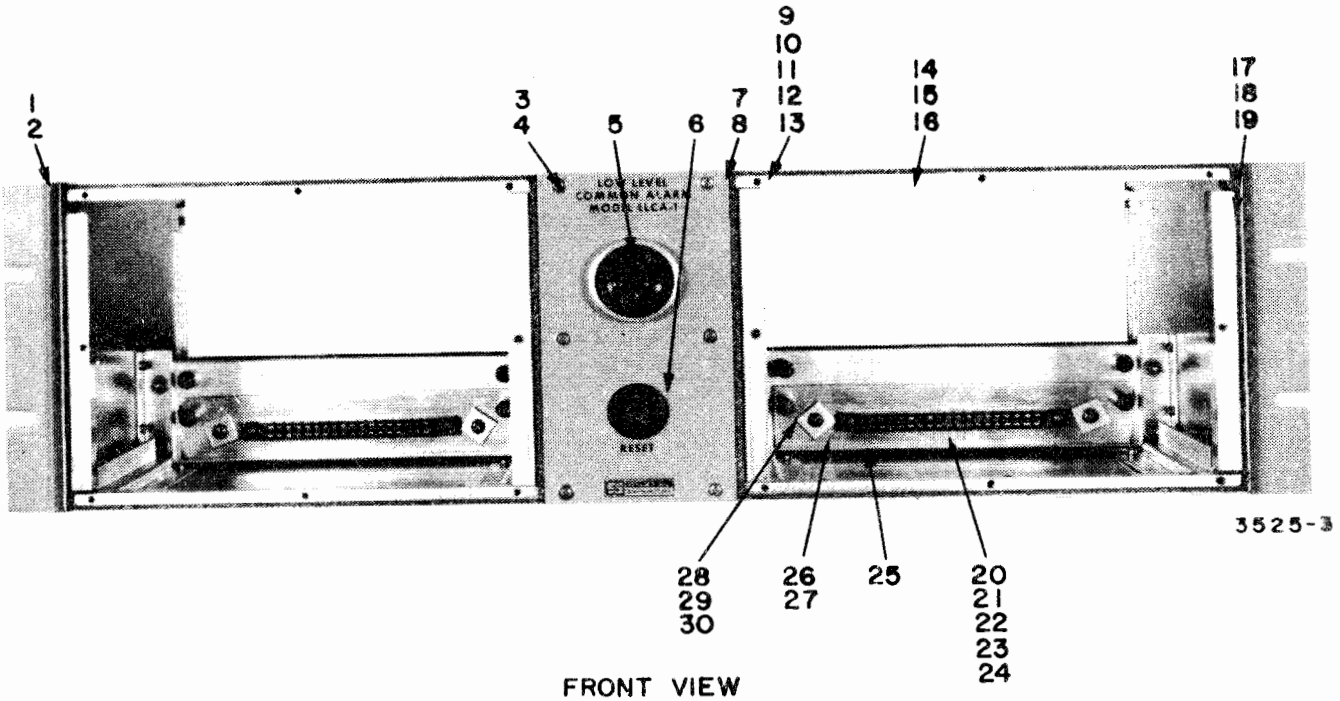
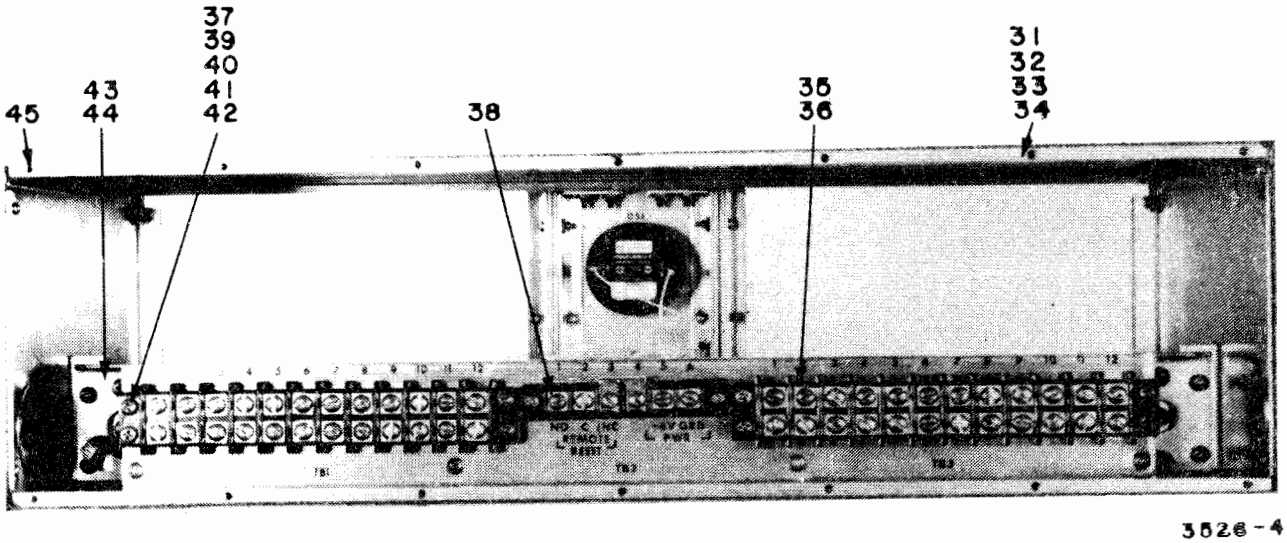


Figure 8-3. Circuit Board Assembly, Part Number 80397350-000

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SMR CODE
8-3-	80397350-000	CIRCUIT BOARD .... ASSEMBLY (For NHA, see fig. 8-2)	REF		
-1	RCR20G561JS	RESISTOR, ... Fixed, 560 ohms, 1W, ±5%	12		PAFZZ
-2	1N4003	. SEMICONDUCTOR .. DEVICE, Diode, silicon (81349)	12		PAFZZ
■ -3	TP154-2C48VDC	. RELAY (02288)....	8		PAFZZ
-4	80397351-000	. BOARD ..... Component	1		



FRONT VIEW



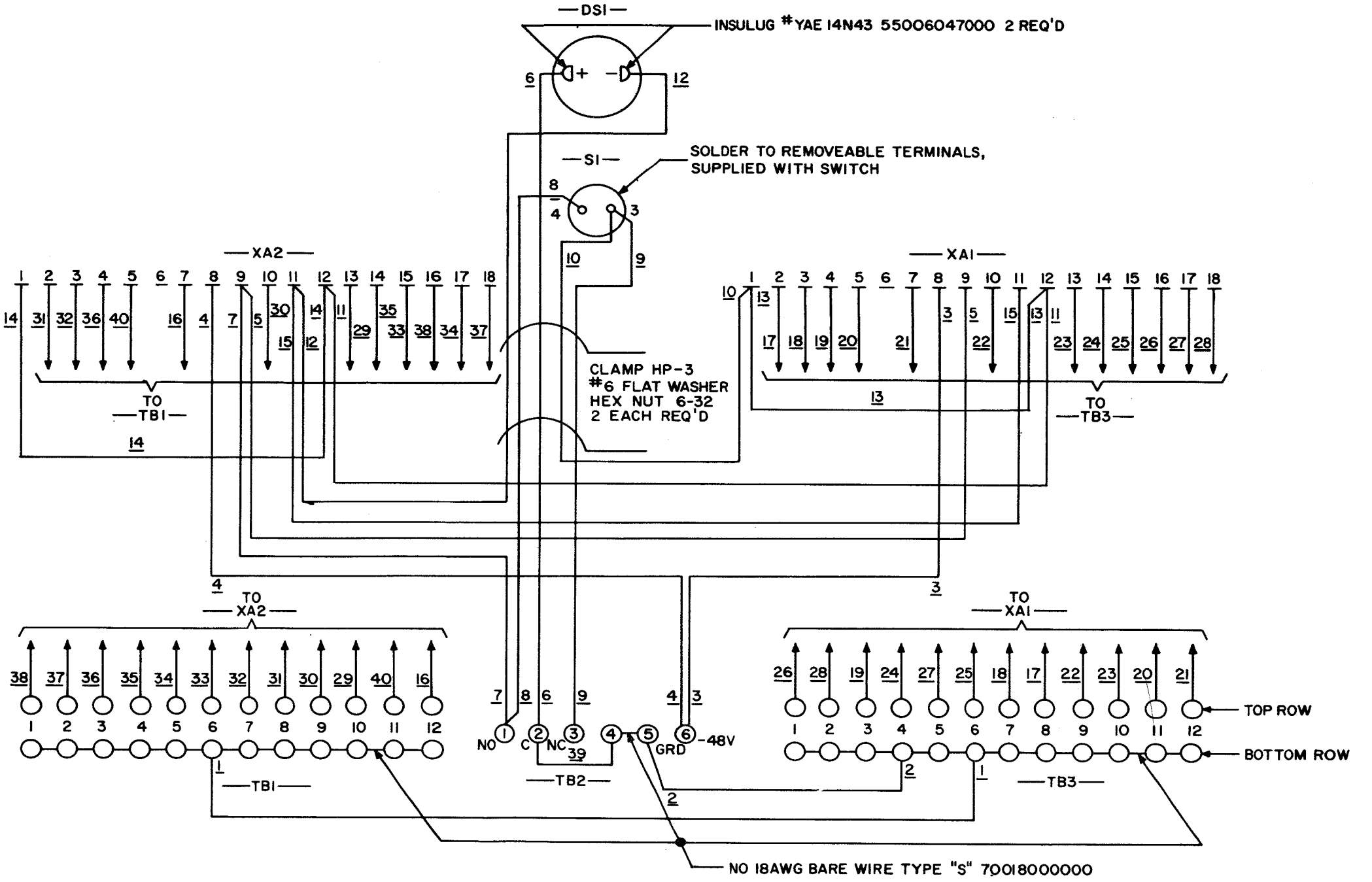
REAR VIEW

Figure 8-4. Housing Assembly, Part Number 90397037-001

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SMR CODE
8-4-	90397037-001	HOUSING ASSEMBLY . . . (For NHA, see fig. 8-1)	REF		
-1	62021869-001	. MOUNTING . . . . . ANGLE, Rack	2		MFFZZ
-2	MS51957-43	. SCREW (AP)	4		PAFZZ
-3	61060093-001	. PANEL, Front	1		MFFZZ
-4	MS51957-14	. SCREW (AP)	6		PAFZZ
-5	SC628A	. ALARM, Audible . . . (37942)	1		PAFZZ
-6	MS25089-3CR	. SWITCH, Push . . . . . (96906)	1		
-7	62060248-001	. PANEL, Rear	1		
-8	MS24693C2	. SCREW (AP)	14		
-9	62021831-000	. SUPPORT . . . . . BRACKET ASSEMBLY	2		MFFZZ
-10	62021823-000	. SUPPORT . . . . . BRACKET ASSEMBLY	2		MFFZZ
-11	MS24693C6	. SCREW (AP)	8		PAFZZ
-12	MS51957-120	. SCREW, Machine . . . (AP)	4		PAFZZ
-13	52090224-000	. SPACER, Bar	4		MFFZZ
-14	62021828-000	. BAR, Support	4		MFFZZ
-15	52090226-000	. SPACER, Strip	2		MFFZZ
-16	MS24693C2	. SCREW (AP)	14		PAFZZ
-17	62021827-011	. BAR, Tapped	1		MFFZZ
	62021827-012	. BAR, Tapped	1		MFFZZ
-18	MS24693C2	. SCREW (AP)	4		PAFZZ
-19	52090230-000	. SPACER, Strip	2		MFFZZ
-20	250-18-30-211BCP	. CONNECTOR, ... 18 pin (71785)	2		PAFZZ
-21	MS51957-120	. SCREW, Machine . . . (AP)	4		PAFZZ
-22	MS15795-803	. WASHER (AP)	4		PAFZZ
-23	MS35338-135	. WASHER (AP)	4		PAFZZ

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION 1 2 3 4 5 6 7	UNITS PER ASSY	USABLE ON CODE	SMR CODE
8-4-24	MS35649-244	. NUT (AP)	4		PAFZZ
-25	62030724-000	. PLATE, ... Connector	2		MFFZZ
-26	MS51957-28	. SCREW (AP)	4		
-27	62010120-000	. WASHER, Flat . . . . . (AP)	4		PAFZZN
-28	55077111-000	. PIN, Guide	8		MFFZZ
-29	MS51957-43	. SCREW (AP)	8		PAFZZ
-30	MS35338-137	. WASHER (AP)	8		PAFZZ
-31	62021651-000	. BAR, Support	2		MFFZZ
-32	52090213-011	. SPACER, Strip	2		
-33	55082055-000	. GASKET, Rfi	AR		
-34	MS24693C2	. SCREW (AP)	6		
-35	62030752-001	. PLATE, Component . . . mounting	1		
-36	MS51957-28	. SCREW (AP)	4		PAFZZ
-37	601C2104-12	. TERMINAL . . . . . BOARD (75382)	2		PAFZZ
-38	599-2004-6	. TERMINAL . . . . . BOARD (75382)	1		PAFZZ
-39	MS51957-123	. SCREW, Machine . . . . (AP)	10		PAFZZ
-40	MS15795-805	. WASHER (AP)	10		PAFZZ
-41	MS35338-136	. WASHER (AP)	10		PAFZZ
-42	MS35649-264	. NUT (AP)	10		PAFZZ
-43	62030720-000	. BRACKET, ... Component mounting	1		MFFZZ
-44	MS51957-26	. SCREW (AP)	4		PAFZZ
-45	62000481-000	. CHASSIS, Rivet, ... Assembly	1		XBFZZ

THE END

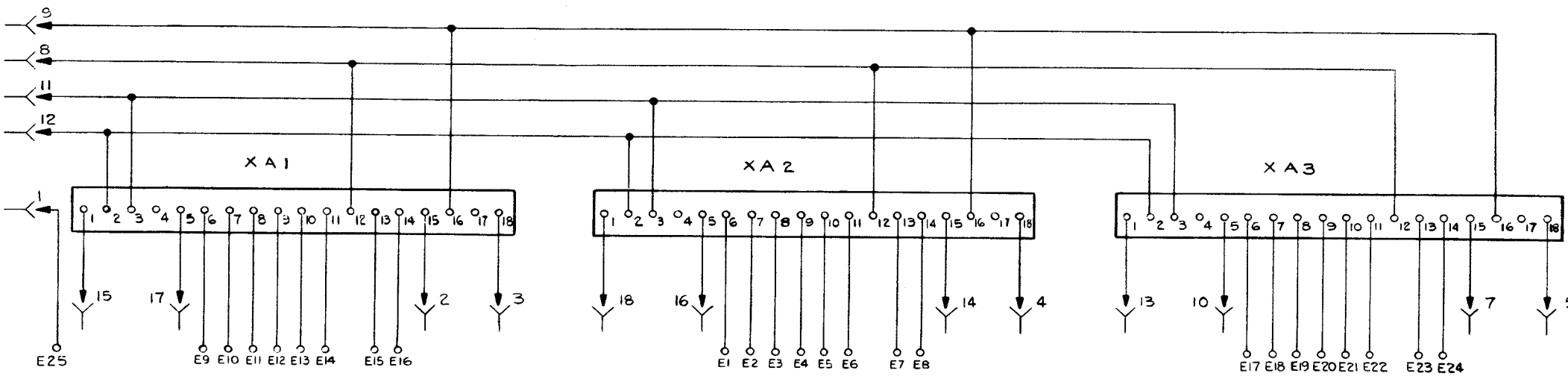


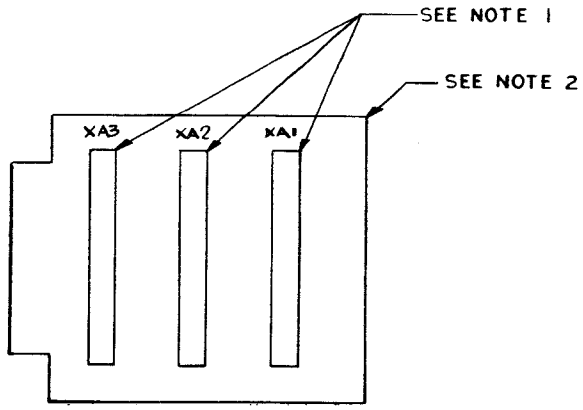
NOTE:

1. ALL FLEXIBLE WIRES ARE, UNCOVERED PLASTIC STRANDED CONDUCTOR TYPE "B" PER MIL-W-16878 OR EQUAL.

TMB83904006-1

Figure 7-2. Housing Assembly A1, Wiring Diagram



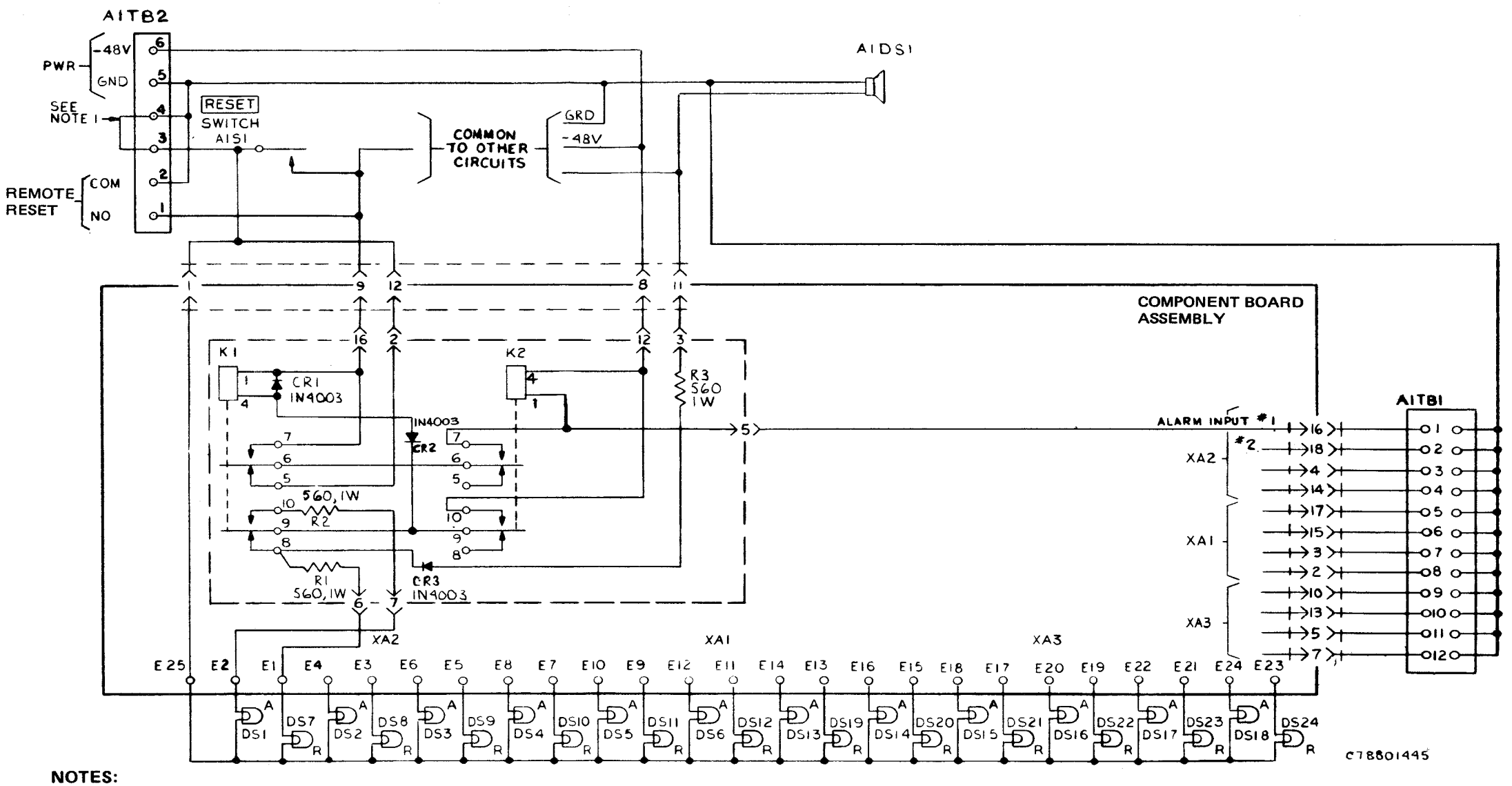


NOTES:

1. FOR CIRCUIT BOARD ASSEMBLIES A1, A2, A3 SEE FIGURE 7-6.
2. FOR COMMON ALARM MODULES A2, A3, SEE FIGURE 7-3.

7900090

Figure 7-4. Component Board Assembly A2A4, A3A4, Wiring Diagram



NOTES:

1. REMOVE STRAP ACROSS TERMINALS 3 AND 4 WHEN REMOTE RESET SWITCH IS USED.
2. [ ] INDICATES EQUIPMENT MARKING

Figure 7-5. Common Alarm, Schematic Diagram