DATA AUXILIARY SET 832A-L1

PROCESSOR-CONTROLLED ALARM CIRCUIT

DESCRIPTION, INSTALLATION, AND TEST PROCEDURE

1. GENERAL

1.01 This section contains the physical and functional descriptions together with installation and test procedures for data auxiliary set (DAS) 832A-L1. Other than a description of interface signals and customer options, information pertaining to customer-provided data processing equipment is not given.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 DAS 832A-L1 is a host processor-controlled alarm circuit designed for use with data processor-controlled maintenance systems such as circuit maintenance systems CMS 1A/B, PC 1A, CMS 2A, and CMS 3A. In addition, DAS 832A-L1 is compatible with minicomputer and microcomputer systems which provide an asynchronous interface that meets the requirements of EIA standard RS-232-C voltage levels. The DAS provides local visual and audible indications when error conditions are detected within the associated processor. Loop closures are also provided which may be connected to the central office or building alarm to indicate a remote error condition and to indicate when an alarm has been cut off at the DAS.

2. DESCRIPTION

PHYSICAL DESCRIPTION

2.01 DAS 832A-L1, as shown in Fig. 1, consists of a circuit pack (SC 1) mounted in a modified 47A1 data mounting. The overall dimensions of the DAS are approximately 5.8 inches wide, 2.2 inches high, and 10.9 inches deep. The weight is

approximately 3.5 pounds without the KS-21239-type transformer. Multiple DASs can be installed in a 39A1 or 40B1 data mounting.

2.02 Four light emitting diodes (LEDs) are provided as a visual status indication of the DAS. The LEDs are visible through translucent designations located on the front faceplate of the DAS as follows:

- ACO (Alarm Cutoff)—This indicator is lighted when a primary or auxiliary alarm has been detected and cut off manually by depressing the ACO switch.

- AUX (Auxiliary Alarm)—This indicator is lighted when an auxiliary alarm has been detected.

- PRI (Primary Alarm)—This indicator is lighted when a primary alarm has been detected.

- DIS (Disable Timing)—This indicator is lighted when a *delayed* primary alarm has

been detected and then disabled, or when option Z is installed.

2.03 A nonlocking switch designated ACO is located at the front of the DAS. This switch provides a local means of disabling the audible alarm. The two additional switches are nonfunctional.

2.04 Two 25-pin connectors are provided at the rear of the DAS for connection to the processor and office alarm circuits. Connection to the processor is accomplished by the female KS-19087-L2 connector and a customer-provided M25A (or equivalent) cord not to exceed 50 feet in length. Connection to the office alarm circuits is accomplished by the male KS-19088-L2 connector and the female KS-19087-L2 connector (equipped with a KS-19196-L2 hood) provided with the DAS.

2.05 The female 25-pin connector is wired in accordance with Table A, and the male 25-pin connector is wired in accordance with Table B.

STATUS INDICATORS

OPTION SWITCHES

ALARM CUTOFF SWITCH
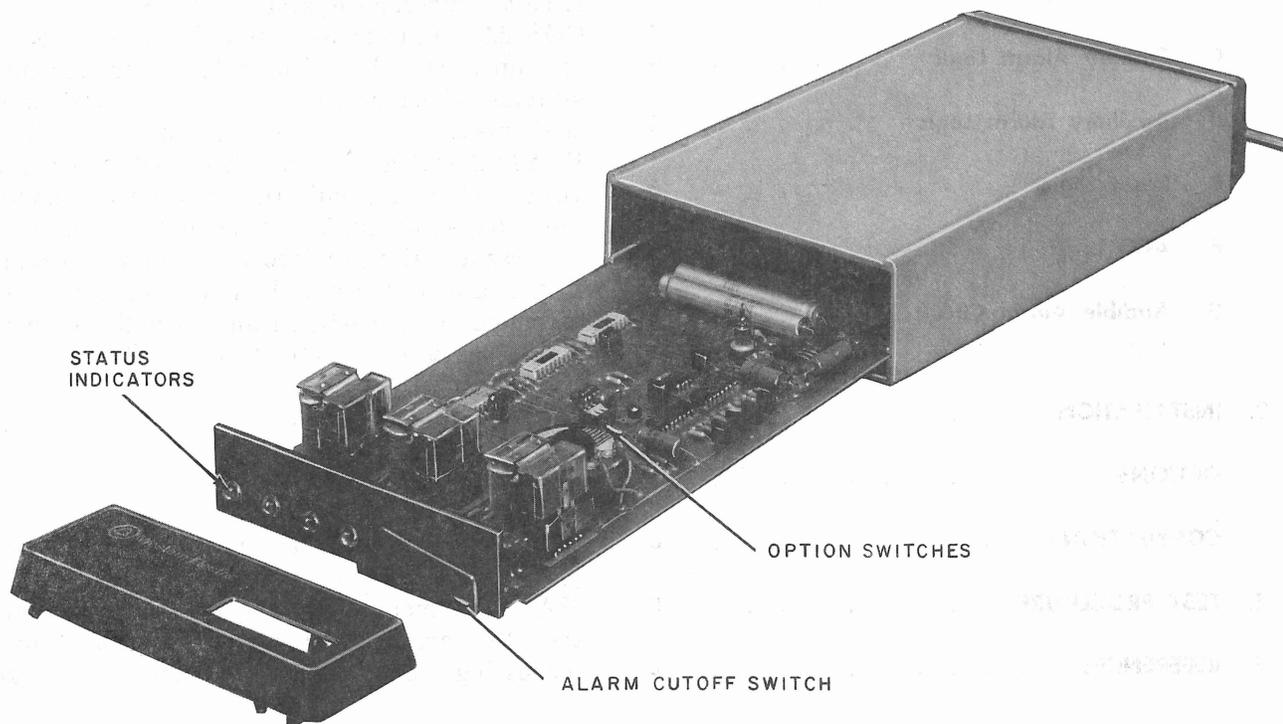
Fig. 1—DAS 832A-L1 Disassembled

TABLE A

FEMALE 25-PIN CONNECTOR (J2) TO PROCESSOR

PIN	FUNCTION	MNEMONIC
1	Frame Ground	FG
2	Transmitted Data Delayed Primary Alarm	TRD
4	Request-to-Send Alarm Reset	R2S
5	Clear-to-Send Auxiliary Alarm	C2S
12	Secondary Receive Line Primary Alarm	RCR
19	Secondary Request-to-Send Auxiliary Alarm	RCT
20	Data Terminal Ready Primary Alarm	DTR

TABLE B

MALE 25-PIN CONNECTOR (P1) TO OFFICE ALARMS

PIN	FUNCTION	MNEMONIC
23	Alarm Cutoff 1 Break	ACO1B
24	Alarm Cutoff 1 Return	ACO1R
12	Alarm Cutoff 2 Break	ACO2B
22	Auxiliary 1 Break	AUX1B
8	Auxiliary 1 Make	AUX1M
7	Auxiliary 1 Return	AUX1R
25	Auxiliary 2 Break	AUX2B
21	Auxiliary 2 Make	AUX2M
4	Auxiliary 2 Return	AUX2R
5	Primary 1 Break	PRI1B
14	Primary 1 Return	PRI1R
16	Primary 2 Break	PRI2B
1	Primary 2 Return	PRI2R

POWER REQUIREMENTS

2.06 Low voltage alternating current is supplied to the DAS by an external transformer (KS-21239-type) provided with the DAS and mounted on a customer-provided 105- to 129-volt +57- to 63-Hz nonswitched outlet. The transformer is equipped with a 6-foot cord (CA1).

FUNCTIONAL DESCRIPTION

2.07 DAS 832-L1 accepts bipolar voltage levels at the customer interface, and performs logic and timing functions which monitor the associated processor. Alarm conditions are activated under software control when error conditions are detected during execution of software in the associated processor. Refer to Fig. 2 for a functional block diagram of the DAS.

A. Customer Interface Leads (J2) to Processor

2.08 *Frame Ground (FG)—Pin 1:* This lead is connected to the DAS housing and the local power ground through the third conductor in the power cord. Frame ground is normally connected to signal ground (AB) which minimizes the introduction of noise into electronic circuitry. Option ZH permits FG to be isolated from AB if the customer specifies a different grounding arrangement.

2.09 *Transmitted Data Delayed Primary Alarm (TRD)—Pin 2:* Positive pulses are generated by the associated processor and delivered to the DAS on this lead at least once in approximately 20 seconds. A negative voltage or open circuit on this lead for approximately 20 seconds triggers an alarm condition. Option Z inhibits this function.

2.10 *Request to Send Alarm Reset (R2S)—Pin 4:* A positive pulse from the associated processor to the DAS on this lead resets the alarm circuitry once the condition that generated the alarm has been cleared. The positive pulse must be applied to both the R2S and TRD leads within approximately 20 seconds to reset the DAS.

2.11 *Clear to Send Auxiliary Alarm (C2S)—Pin 5:* Signals generated by the DAS indicate the status of the DAS to the processor. A positive voltage on this lead indicates an auxiliary alarm condition, while a negative voltage is the normal state.

2.12 *Secondary Receive Line Primary Alarm (RCR)—Pin 12:* Signals generated by the DAS indicate the status of the DAS to the processor. A positive voltage on this lead indicates a primary alarm condition, while a negative voltage is the normal state.

2.13 *Secondary Request to Send Auxiliary Alarm (RCT)—Pin 19:* Signals generated by the DAS indicate the status of the DAS to the processor. A negative voltage or open on this lead indicates an alarm condition, while a positive voltage is the normal state.

2.14 *Data Terminal Ready Primary Alarm (DTR)—Pin 20:* Signals generated by the DAS indicate the status of the DAS to the processor. A negative voltage or open on this lead indicates an alarm condition, while a positive voltage is the normal state.

B. Alarm Interface Leads (P1) to Office Alarms

2.15 Interface leads accessible through the male 25-pin connector for connection to office alarms are given in Table B.

C. Primary Alarm Logic

2.16 When a primary alarm condition has been detected by the processor during execution of software, the processor changes the DTR lead from space (positive) to mark (negative). The primary alarm logic responds by releasing the PRI relay, which activates the audible alarm and lights the PRI indicator (LED). In addition contact closures are provided on pins 1 and 16, 5 and 14 of the office alarm interface.

2.17 A delayed primary alarm is used to monitor progress of the software. The processor must present 5-ms pulses on the TRD lead which are generated at least once every 15 to 18 seconds. Absence of these pulses for approximately 20 seconds indicate an alarm condition to the DAS. Therefore, the primary alarm logic responds by releasing the PRI relay, which activates the audible alarm and lights the PRI indicator.

D. Auxiliary Alarm Logic

2.18 When a designated auxiliary alarm condition has been detected by the processor during execution of software, the processor changes the
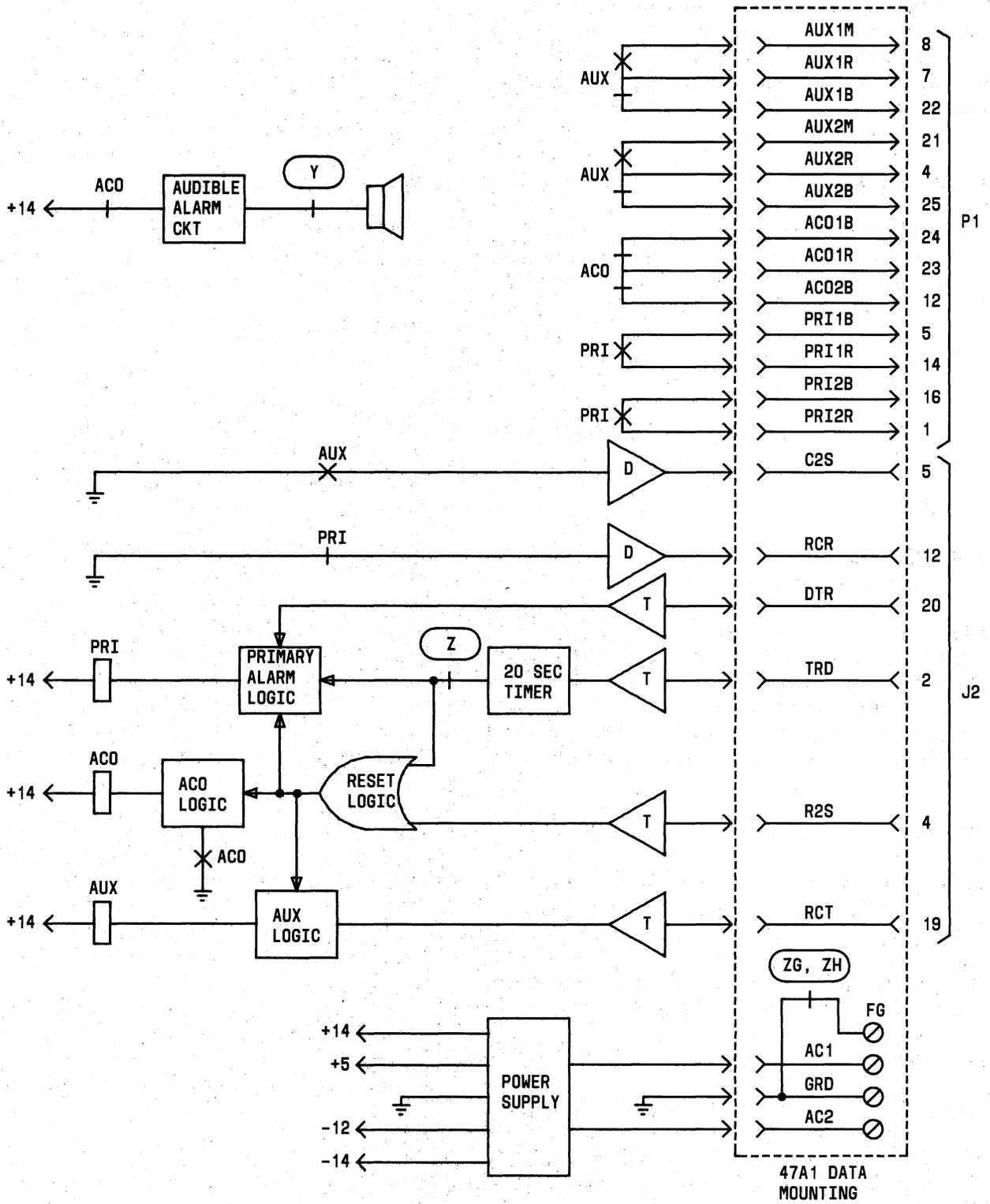
Fig. 2—Functional Block Diagram

RCT lead from space (positive) to mark (negative). The auxiliary alarm logic responds by energizing the AUX relay, which activates the audible alarm and lights the AUX indicator. In addition, two sets of make or break contacts are provided on pins 8-7-22 and 21-4-25 of the office alarm interface.

E. Reset Logic

2.19 When an alarm condition has been cleared, the DAS can be reset by the processor. A pulse presented on the R2S lead resets the DAS logic circuitry under the following conditions:

(a) TRD lead has been pulsed within 15 to 18 seconds.

(b) TRD lead is not held marking (negative).

F. ACO Logic

2.20 The alarm cutoff circuitry is controlled by the reset logic and the front-mounted ACO switch. A pulse presented to the DAS on lead R2S resets the ACO relay. Manual operation of the ACO switch energizes the ACO relay, which disables the audible alarm and lights the ACO indicator. In addition, two sets of break contacts are provided on pins 24 and 23, 23 and 12, which may be combined with the PRI and AUX contacts.

G. Audible Alarm Circuit

2.21 The audible alarm circuit generates an audible signal at a frequency of 2900 ±100 Hz. Operation of the PRI and/or AUX relays activates the alarm, while operation of the ACO relay deactivates the alarm. The audible alarm can be inhibited under control of option Y.

3. INSTALLATION

3.01 The DAS is designed for mounting on a flat surface such as a desk, table, stand, or in a Bell System-provided equipment cabinet. Environmental limits are a temperature range of 40° to 120°F and relative humidity of 20 to 95 percent. Physical limitations are that the DAS must be mounted within 6 feet of a nonswitched ac power source and within 50 feet of the host processor.

OPTIONS

3.02 For option installation, access to circuit pack (CP) SC1 must be obtained. To gain access, remove the DAS from the housing as follows:

(1) Remove the front faceplate by gently squeezing at the top, rotating downward and away from the housing.

(2) If provided, loosen the retaining screw under the left front side of the housing until it is completely disengaged from the data set.

(3) Grasp the wire handle and pull outward to remove the CP.

3.03 Refer to Fig. 3 and install the customer options specified on the service order. Options ZG, ZH are installed and removed by a screw switch located on the backplane (inside) of the 47A1 data unit.
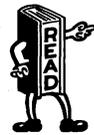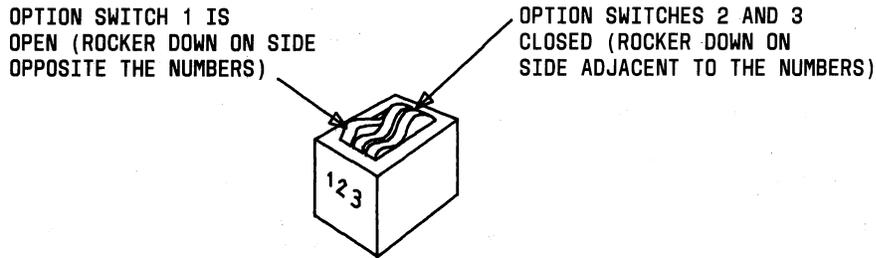

A long screwdriver (6-inch) is needed to operate the screw switch that controls the grounding option. If the appropriate screwdriver is not available, the backplane may be taken out of the housing by removing the two screws on the bottom of the housing.

3.04 To reassemble the DAS, perform the following procedure:

(1) Slide the CP into the housing, ensuring that the contacts at the rear of the CP are firmly seated in the housing connector.

(2) If provided, align and tighten the retaining screw.

(3) Hook the tabs on the bottom of the front faceplate into the detents in the bottom of the housing and gently rotate the faceplate into the housing until it snaps into place.

CONNECTIONS

3.05 The following connection procedures are applicable to a CMS-type system. Connections for similar systems may differ and are considered to be beyond the scope of this section. However, interpolations can be made from the procedures given for CMS-type systems.

OPTION SWITCH 1 IS
OPEN (ROCKER DOWN ON SIDE
OPPOSITE THE NUMBERS)

OPTION SWITCHES 2 AND 3
CLOSED (ROCKER DOWN ON
SIDE ADJACENT TO THE NUMBERS)

OPTION	FEATURE	SWITCH POSITION
Y	DISABLE AUDIBLE ALARM	S2 OPEN
Z	DISABLE TIMER	S1 OPEN
		S3 CLOSE
ZG	AB CONNECTED TO FG	SWITCH CLOSE
ZH	AB ISOLATED FROM FG	SWITCH OPEN

Fig. 3—Options

3.06 Attach the power cord from the 47A1 data mounting to the KS-21239-type transformer as follows:

(1) Brown (AC 1) wire to terminal 1

(2) Orange (GRD) wire to terminal 2

(3) Red (AC 2) wire to terminal 3

(4) Black (FG) wire to terminal 4.

3.07 Locate the office alarm wiring and determine that a pair of wires is connected to the office alarm grid. Connect (solder or wire wrap) this pair of wires to pins 5 and 24 of the KS-19087-L2 female connector that is shipped loose with the DAS. Verify that pins 14 and 23 are strapped together at the connector.

3.08 Temporarily place a jumper between pin 5 and pin 24. Contact the Trunk Operations Center (TOC) and verify that a completed circuit exists; then remove the jumper.

3.09 Check the assignment of the asynchronous line multiplexer unit (LMU) and assign the DAS to LMU 00-09 or any vacant position with modem control.

3.10 Plug the DAS transformer into a 117-volt ac source. The PRI and AUX indicators light and the alarm sounds. Depress the ACO switch to disable the alarm and light the ACO indicator.

3.11 Plug the male connector of the M25A cable into J2 (to processor). Plug the female connector of the M25A cable into the LMU 00-09 position or other specifically assigned position.

4. TEST PROCEDURE

4.01 Perform the following procedure to verify correct installation and operation:

STEP	PROCEDURE
1	Reboot the CMS processor.
	Requirement: All indicators are off and the alarm is silent.
2	Plug the female connector from office alarm grid into J1 on the DAS.
	Requirement: No alarm received by the TOC.
3	Halt the CMS processor.
	Requirement: After approximately 20 seconds, PRI indicator lights and the alarm sounds.
4	Depress the ACO switch on the DAS.
	Requirement: ACO indicator lights and the alarm is silent.
5	Check the alarm status with the TOC. If an alarm was received, reboot the CMS processor, and the installation is completed. If an alarm was *not* received, check all connections and the DAS before reporting trouble to supervision.

5. REFERENCES

5.01 SD- and CD-1P104-01 provide additional
information on DAS 832A-L1.