1A DATA STATION
MULTICHANNEL ARRANGEMENTS
SUMMARIZING SPECIFICATION
DATA SYSTEMS

1. GENERAL

SCOPE

1.01 This specification, together with the supplementary information listed herein, summarizes the design requirements, ordering, and application of the apparatus constituting the 1A data station, multichannel arrangements (MCA).

1.02 This specification is reissued to:

(a) Add DP69 and rate DP56 Mfr Disc.

(b) Add the M11G cord which replaces the modified M25B cord.

(c) Add the ED-73542-( ) connector cable for the 29A1 and 29B1 data mountings.

DESCRIPTION

1.03 The 1A data station, MCA, is a solid state voice-frequency carrier multiplex system utilizing the 43B1 VF carrier data system (VFCD) organization for use on customer premises. It is designed as a low speed (75 and 150 baud) data system for use over 2-wire and 4-wire private line voiceband facilities. The following features are offered:

(a) Plug-in and rapid installation on customer premises.

(b) Identical to the 43B1 VFCD system with regard to numbers of channels, channel bandwidth and frequency assignments, method of multiplexing, send and receive levels, and channel and system alarms.

(c) Compatible end-to-end with the 43B1 VFCD system, the 43A1 VF carrier telegraph system and the 130 subscriber set, except for two lower double width channels.

(d) Option of either binary (2-level) or ternary (binary plus supervision) transmission mode.

(e) Option of baseband interfaces.

(1) Voltage per EIA standard RS-232B (binary or ternary).

(2) 3-Wire full-duplex 20-mA neutral current (binary only).

(3) 2-Wire half-duplex 62.5-mA (20 mA optional) neutral current (binary only).

(4) $\pm$3 mA balanced polar (binary or ternary).

(f) Integrated alarm and testing features to facilitate monitoring and maintenance.

1.04 The 1A data station is generically defined as any combination of channels and/or systems. The designation 1A data station, multichannel arrangements represents an identification code only and cannot be used to order or specify any of the component apparatus constituting the 1A data station.

CAPACITY

1.05 The 1A data station, MCA, is capable of multiplexing up to 17 single width (SW, 75 baud) channels or 8 double width (DW, 150 baud) channels and one single width channel on a single 4-wire voice facility. For a 2-wire facility a maximum of 8 single width or 4 double width channels may be multiplexed. A total of 25 center frequencies are available as listed in Section 4.

POWER REQUIREMENTS

1.06 Each channel terminal may require as much as 3 watts each of +24 and −24 volt power, depending upon its baseband interface (EIA or current) and transmission mode (binary or ternary). The KS-20575 rectifier is capable of supplying 2 amperes at +24 and −24 volts, hence ten channel terminals plus common equipment can safely be powered by this rectifier. Table A provides current drains for individual circuit packs.

TABLE A
CURRENT DRAIN IN MILLIAMPERES

	CARRIER PRESENT		NO CARRIER	
Channel Terminal (4 Circuit Pack Total)	+24	−24	+24	−24
Binary E/W				
DP65 (EIA)	85	60	95	90
DP63	135	125	125	135
DP68 (62.5/20 mA Neutral)	78	135	110	115
(Test Mode)	140	125	—	—
DP69 (20 mA Neutral)	130	54	150	79
(Test Mode)	170	84	—	—
VB Loop Around	—	—	180	54
Ternary E/W				
DP65 (EIA)	105	65	110	100
DP63	155	130	140	145
Line Circuit (DP52)	17	11	17	11
Channel Check (DP58)	33	33	33	33
Alarm Indicator (DP59)				
VB Loop SW Normal	8.5	25	8.5	25
VB Loop SW Operated	30	25	30	25
Carrier System Alarm (DP62)	24	28	24	58

2. SUPPLEMENTARY INFORMATION

RS-232B—EIA Standard. Interface between data processing terminal equipment and data communications equipment.

X-17578—Manufacturing Testing Requirements for 1A Data Station, Multichannel Arrangements
X-77746—Manufacturing Testing Requirements for 43B1 VF Carrier Data System
332-852-107—Description — 4066G Network
590-102-125—29A1 and 29B2 Data Mountings—Identification
591-813-100—Description and Operation — 1A Data Station, MCA
591-813-200—Installation — 1A Data Station, MCA
591-813-300—Maintenance — 1A Data Station, MCA
591-813-500—Test Procedures — 1A Data Station, MCA
598-073-100—Data Auxiliary Set 811G-L1 Identification
598-074-100—Data Auxiliary Set 811H-L1 Identification
800-610-158—Requirements for Packaged Electronic Products
800-610-159—Printed Wiring Assemblies — General Equipment Requirements
807-170-161—43B1 VF Carrier and Associated Equipment

3. DRAWINGS

Circuit schematic drawings for the 1A data station are given in:

SD-1D148-01—1A Data Station Multichannel Arrangements
SD-70958-01—43B1 Voice Frequency Carrier Data System

4. PRODUCT

Summary of orderable apparatus and equipment codes for the 1A data station, multichannel arrangements:

29A1 Data Mounting (AT&TCo Std)

Wired framework per SD-1D148-01, App Fig. 1 for mounting a maximum of two channel terminals, common apparatus (consisting of line, system alarm, alarm indicator, and channel check circuits), one KS-20575 rectifier, and one data auxiliary set 811G-L1, all ordered separately. Designed to mount on either 23-inch or 25-inch racks. Overall dimensions are 23 inches wide by 8 inches high by 11 inches deep. One required per system.

29B1 Data Mounting (AT&TCo Std)

Wired framework per SD-1D148-01, App Fig. 3 for mounting a maximum of four channel terminals

(or three channel terminals and one KS-20575 rectifier) and one data auxiliary set 811H-L1, all ordered separately. Designed to mount on either 23-inch or 25-inch racks. Overall dimensions are 23 inches wide by 8 inches high by 11 inches deep. Used to increase channel capacity of system.

Data Auxiliary Set 811G-L1 (AT&TCo Std)

Wired panel per SD-1D148-01, App Fig. 2 providing channel and system testing as well as two 25-pin connectors and alarm outputs for customer terminations. Designed as a detachable unit for mounting on rear of 29A1 data mounting or in customer access area of KS-20093, L1 cabinet. Unit comes equipped with 4-foot cable terminated in a 50-pin connector for plugging into 29A1 data mounting. Overall dimensions are 5 inches wide by 8 inches high by 3.1 inches deep. One required for each 29A1 data mounting.

Data Auxiliary Set 811H-L1 (AT&TCo Std)

Wired panel per SD-1D148-01, App Fig. 4 providing channel test and four 25-pin connectors for customer terminations. Designed as a detachable unit for mounting on rear of 29B1 data mounting or in customer access area of KS-20093, L1 cabinet. Unit comes equipped with 4-foot cable terminated in a 50-pin connector for plugging into 29B1 data mounting. Overall dimensions are 5 inches wide by 5 inches high by 2.5 inches deep. One required for each 29B1 data mounting.

Data Auxiliary Set 811J-L1 (AT&TCo Std)

Wired panel per SD-1D148-01, App Fig. 6 providing channel and system testing, seven 50-pin connectors, and alarm outputs for connecting up to two systems (maximum of five data mountings) to the 10A data line concentrator. Replaces DAS 811G-L1 and 811H-L1 in concentrator application. Designed to mount on either 23-inch or 25-inch racks. Overall dimensions are 23 inches wide by 6 inches high by 6.7 inches deep. To be available shortly after initial offering.

202A Adapter (AT&TCo Std)

A U-shaped metal printed wiring strap card used to interconnect 29A1 and 29B1 data mountings associated with a single system. In particular the 202A adapter will:

(1) Interconnect a 29A1 data mounting with a 29B1 data mounting when the latter contains only channel terminals.

(2) Interconnect two 29B1 data mountings both of which contain only channel terminals.

(3) Interconnect two 29B1 data mountings, the higher* of which contains a maximum of three channel terminals plus a KS-20575 rectifier and the one below contains only channel terminals.

202B Adapter (AT&TCo Std)

A U-shaped metal printed wiring strap card used to interconnect two 29B1 data mountings, the lower* of which contains a maximum of three channel terminals plus a KS-20575 rectifier while the one above contains only channel terminals.

*Higher (lower) refers to the physical location of a data mounting relative to another in a frame or cabinet.

202C Adapter (AT&TCo Std)

A U-shaped metal printed wiring strap card used to interconnect two data mountings where it is desired to share (for mounting economy) channel positions in one 29B1 data mounting between two systems. In particular the 202C adapter will:

(1) Interconnect the two leftmost channel positions of a 29B1 data mounting to another 29B1 data mounting immediately above it.

(2) Interconnect the two rightmost channel positions of a 29B1 data mounting to a 29A1 data mounting immediately below it.

The 202C adapter may also be used just to interconnect leads associated with the cabinet lamps between separate systems, ie, between a 29A1 data mounting of another system above.

KS-20575 Rectifier

AC operated power supply having a frequency tolerance of ± 3 Hz capable of providing $+24$ volts (2 amperes) and -24 volts (2 amperes). Designed to mount in a 29A1 or 29B1 data mounting. One required for each 29A1 data mounting except where

external power is provided. Used in 29B1 when more than 10 channels are used in system.

599A Panel (AT&TCo Std)

Wired panel per SD-1D148-01, App Fig. 5 providing line balancing networks. Designed to mount on 23-inch or 25-inch rack. Comes equipped with one 4066G network; has provisions for mounting a total of four networks. Overall dimensions are 23 inches wide by 2 inches high by 10 inches deep. Ordered when required.

4066G Network (AT&TCo Std)

For use in 599A panel where networks for more than one system are required.

KS-20018,L7 Cabinet

Provides 26 inches of vertical mounting space on 23-inch rack mounting, front and rear access. Overall dimensions are 24 inches wide by 30 inches high by 17 inches deep. Used for small installations, can mount up to 10 channel terminals (three 29-type data mountings) and one 599A panel.

KS-20093,L1 Cabinet

Provides 68 inches of vertical mounting space in both front and rear of the cabinet. Accepts equipment designed for 25-inch rack mounting. Separate customer access area provided in front. Overall dimensions are 72 inches high by 34 inches wide by 30.5 inches deep. The following items must also be ordered to provide a fully equipped cabinet:

KS-20093,L2 Duct Assembly

For routing cables through top of cabinet. Not required when a false floor is available.

KS-20093,L5 Door Panel, Full

Full length front door panel.

KS-20129,L1 Power Strip

A 12-receptacle ac power strip.

18B-49 Indicator

Externally (remote) mounted lamp assembly providing three lamps: red (alarm), green (test) and white (pilot or power) for monitoring. One required per cabinet. Uses standard switchboard lamps which must be ordered separately. May be mounted by screws or rested on horizontal surface.

D4BD-49 Cord (AT&TCo Std)

Provides means for connecting the 18B-49 indicator to the 29A1 data mounting. Standard length is 5-1/2 feet. Also available in 9, 13, and 25 feet when specified.

A25D Connector Cable (AT&TCo Std)

Double ended 50-pin connector cable for connecting data auxiliary set 811J-L1 to either the 29A1 or 29B1 data mountings and the 10A data line concentrator. To be ordered as double ended. Available in 3, 6, and 9 foot lengths as well as any length.

M11G Cord (AT&TCo Std)

Double ended 25-pin connector cord for connecting data auxiliary set 811G-L1 or 811H-L1 to the 27A1 data unit (data set 109D) for use with the 10A data line concentrator. The cord is also used with the 1A data station to provide interface EIA connection for back-to-back arrangements from the 1A data station to a 108- or 109-type data set. Unless otherwise specified, a 10-foot length will be furnished.

ED-73542-( ) Cable Assembly (AT&TCo Std)

Double ended 906E connector cable arranged to physically extend the 202A, 202B, or 202C adapter connections between 29A1 or 29B1 data mountings within the 1A data station multichannel arrangements. Interconnections between remote 29A1 and/or 29B1 data mountings are made possible:

(a) Between adjacent cabinets or bays.

(b) Between the front and rear of a cabinet.

The identical 202-type adapter must be used at each end in order to provide the desired interconnections. The ED-73542-( ) cable assembly shall be furnished only when ordered separately.

A1 Lamp

Three required for each 18B-49 indicator.

Circuit Packs — Channel Terminal

DP1 Through DP25 Transmitters (AT&TCo Std)

One required for each channel terminal, other than those arranged for receive only, per SD-70958-01; frequency assignments as shown in Table B.

DP26 Through DP50 Demodulators (AT&TCo Std)

One required for each channel terminal, other than those arranged for transmit only, per SD-70958-01; frequency assignments as shown in Table B.

TABLE B
CIRCUIT PACK

TRANS-MITTER	DEMODU-LATOR	CENTER FREQUENCY	BANDWIDTH
DP1	DP26	425 Hz	Single
DP2	DP27	595 Hz	
DP3	DP28	765 Hz	
DP4	DP29	935 Hz	
DP5	DP30	1105 Hz	
DP6	DP31	1275 Hz	
DP7	DP32	1445 Hz	
DP8	DP33	1615 Hz	
DP9	DP34	1785 Hz	
DP10	DP35	1955 Hz	
DP11	DP36	2125 Hz	
DP12	DP37	2295 Hz	
DP13	DP38	2465 Hz	
DP14	DP39	2635 Hz	
DP15	DP40	2805 Hz	
DP16	DP41	2975 Hz	
DP17	DP42	3145 Hz	
DP18	DP43	680 Hz	Double
DP19	DP44	1020 Hz	
DP20	DP45	1360 Hz	
DP21	DP46	1700 Hz	
DP22	DP47	2040 Hz	
DP23	DP48	2380 Hz	
DP24	DP49	2720 Hz	
DP25	DP50	3060 Hz	

DP51 Receive Interface (AT&TCo Std)

One required for each binary channel terminal, other than those arranged for transmit only, per SD-70958-01.

DP69 Station Current Interface (AT&TCo Std)

One required for each binary channel terminal that connects to a 20-mA neutral loop or teletypewriter, per SD-1D148-01.

DP57 Ternary Receive Interface (AT&TCo Std)

One required for each ternary channel terminal, per SD-1D148-01.

DP63 Station Balanced Interface (AT&TCo Std)

One required for each channel terminal that connects to the 10A data line concentrator by means of data auxiliary set 811J-L1, or other arrangements where transmission path is terminated in a 109-type data set, per SD-1D148-01. To be available shortly after initial offering.

DP65 Station EIA Interface (AT&TCo Std)

One required for each channel terminal, binary or ternary, that connects to EIA data terminal equipment, per SD-1D148-01. DP65 replaces DP55 circuit pack.

DP68 Line Current Interface (AT&TCo Std)

One required for each binary channel terminal that connects to a 2-wire 62.5-mA (20 mA optional) HDX interface, such as a teletypewriter, per SD-1D148-01.

Circuit Packs — Common

DP52 Line Circuit* (AT&TCo Std)

One required for each 2-wire or 4-wire system, per SD-70958-01.

DP58 Channel Check† (AT&TCo Std)

Used for testing individual channels, per SD-1D148-01. One circuit pack may be used to test a number of systems in a cabinet.

DP59 Alarm Indicator* (AT&TCo Std)

One required for each system to provide alarm features, per SD-1D148-01

DP62 System Alarm† (AT&TCo Std)

One per system as required to provide a carrier system alarm, per SD-70958-01.

* System will not operate without these two circuit packs.

† Optional.

Note: Ordering information for the above products shall be listed per Section 743-001-002.

5. TYPICAL INSTALLATION

5.01 A typical small installation (capable of housing 10 channel terminals) utilizes the KS-20018,L7 cabinet (Fig. 1 and 2). The 29B1 data mountings are connected to the common 29A1 data mounting by means of 202-type adapters and are arranged for 23-inch rack mounting. A 599A panel (not shown) mounts at the bottom, when required. Data auxiliary sets 811G-L1 and 811H-L1 mount on the rear of their associated data mountings (Fig. 3); the 50-pin connectors plug into the front of their associated data mountings.

5.02 Typical KS-20093,L1 cabinet installations (capacity limited by customer access area).

Example 1:

Four 8-channel (DW) systems:

1—KS-20093, L1 cabinet
1—KS-20093, L5 door panel, full
1—KS-20129, L1 power strip
4—29A1 data mountings
4—KS-20575 rectifiers
6—29B1 data mountings
4—data auxiliary sets 811G-L1
6—data auxiliary sets 811H-L1
2—202A adapters
5—202C adapters (or 4 plus hard wiring between systems 2 and 3)
1—599A panel) optional
3—4066G network)
1—18B-49 indicator
1—D4BD-49 cord
3—A1 lamps
Circuit packs as required.

Example 2:

Two 17-channel (SW) systems:

1—KS-20093, L1 cabinet
1—KS-20093, L5 door panel, full
1—KS-20129, L1 power strip
2—29A1 data mountings
4—KS-20575 rectifiers
8—29B1 data mountings
2—data auxiliary sets 811G-L1
8—data auxiliary sets 811H-L1
4—202A adapters
2—202B adapters
1—202C adapter (may substitute hard wiring between systems 1 and 2)
1—599A panel) optional
1—4066G network)
1—18B-49 indicator
1—D4BD-49 cord
3—A1 lamps
Circuit packs as required.

LIST OF AUTHORIZED MFR DISC. CODES

CODE	RATING	REPLACED BY
DP55	Mfr Disc.	DP65
DP56	Mfr Disc.	DP69

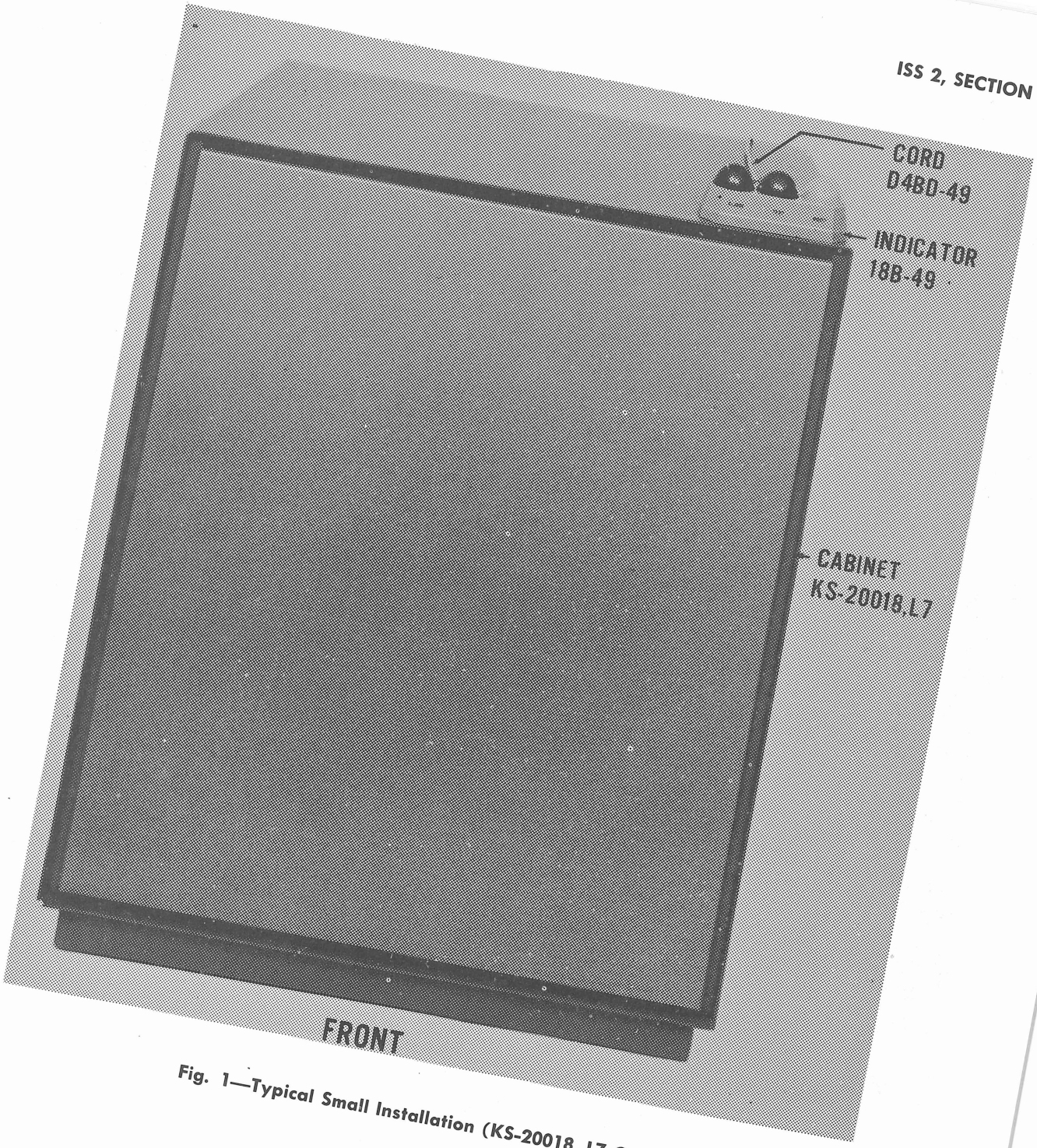

Fig. 1—Typical Small Installation (KS-20018, L7 Cabinet)

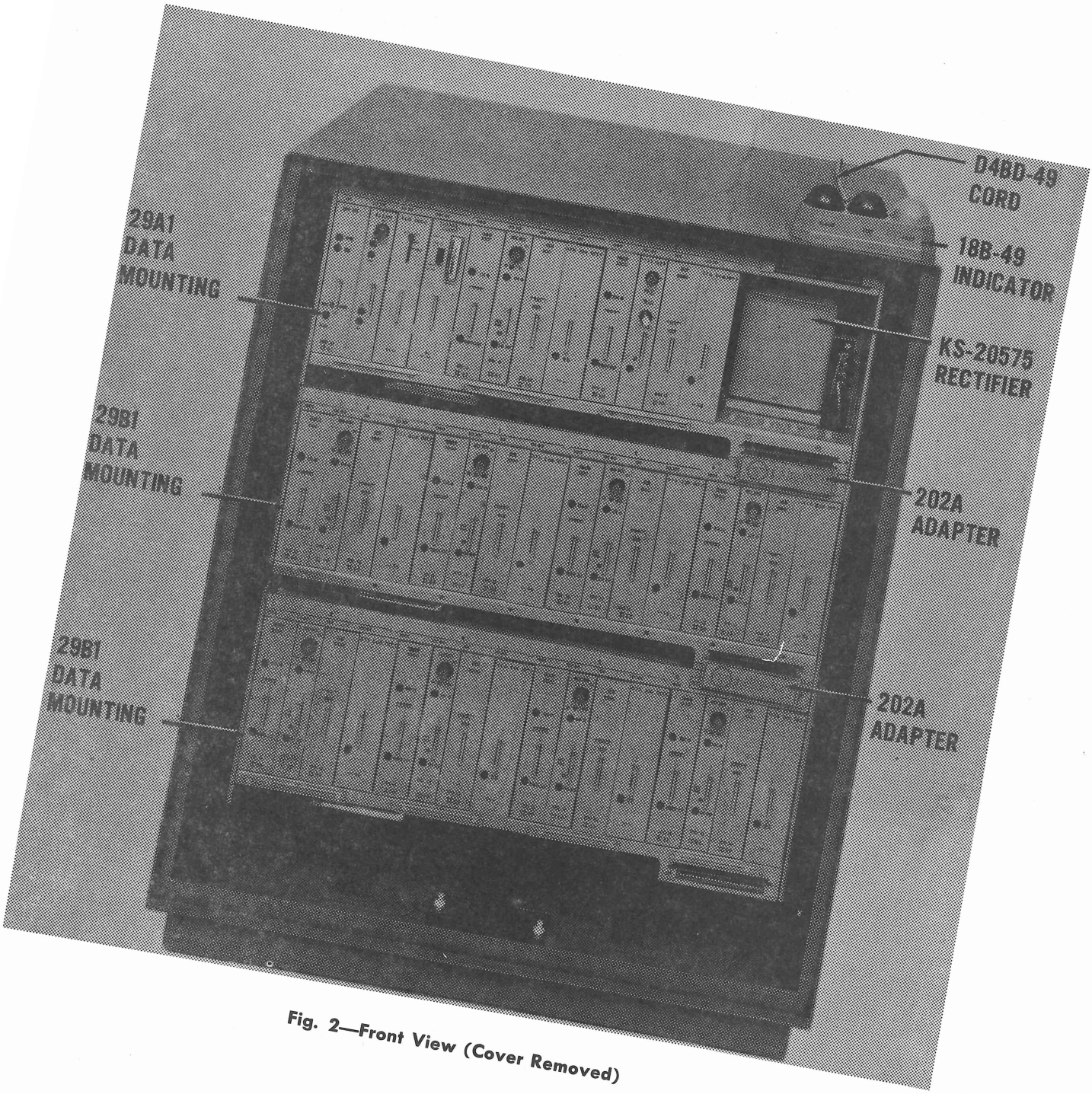

Fig. 2—Front View (Cover Removed)

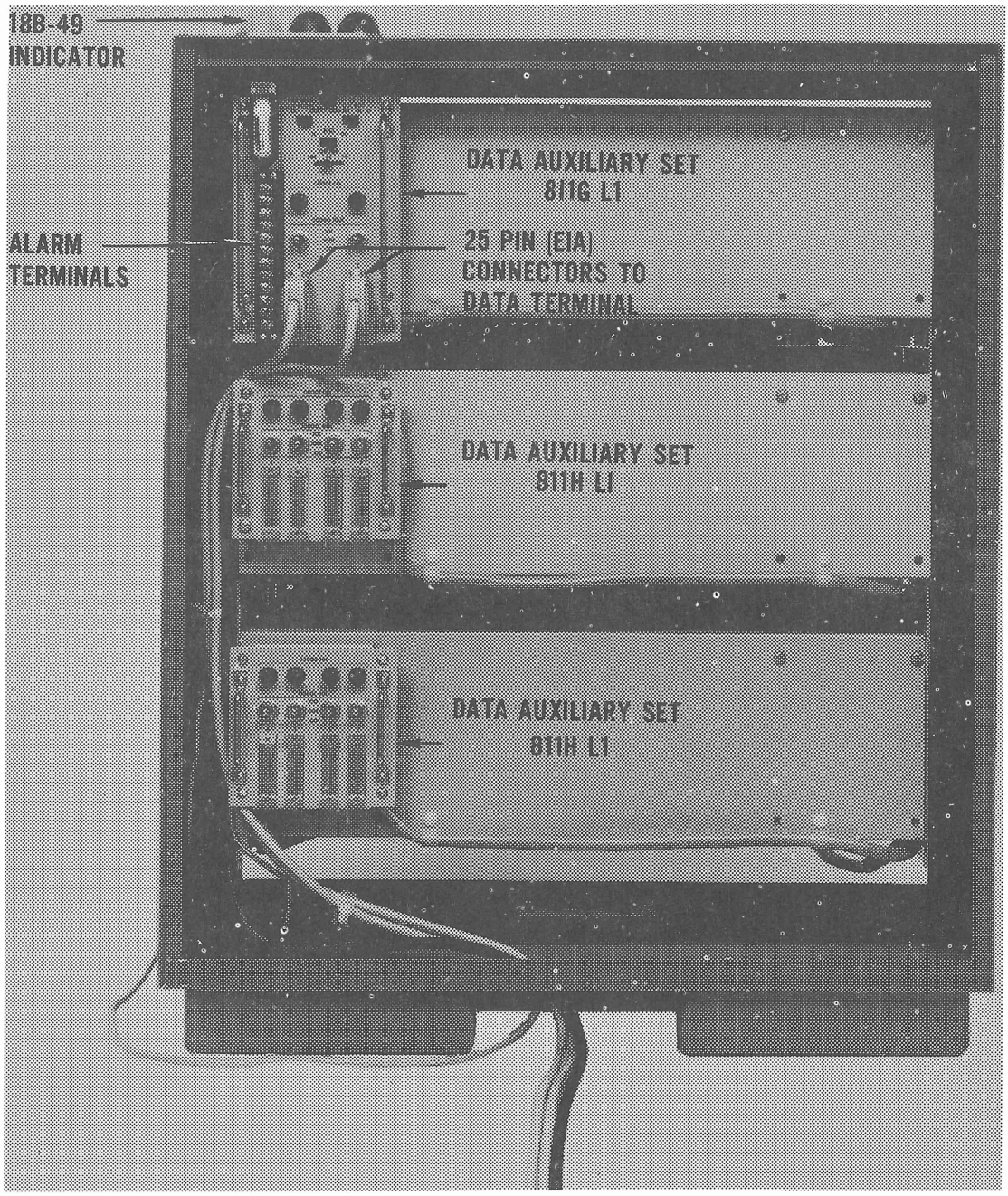

Fig. 3—Rear View (Cover Removed)