

DATA SET 109D-TYPE
MULTIPLE DATA SET ARRANGEMENT
USING 28A1 DATA MOUNTING AND 27A1 DATA UNIT
DESCRIPTION

1. GENERAL

1.01 This section covers in general terms the physical and functional description of the Data Set 109D-type multiple data set arrangement, which uses the 28A1 Data Mounting and the 27A1 Data Unit as the associated mounting apparatus. This arrangement allows the installation of a large number of data sets in a relatively small area as compared to other Data Set 109D-type mounting arrangements, and provides some features not available in the other arrangements.

1.02 Data Set 109D-type (Fig. 1) is a half-duplex, serial transmission dc data set for use over 2-wire metallic loops. It is designed to operate in conjunction with *any* Data Set 109-type on a point-to-point basis or a Data Set 109B-type on a point-to-hub basis. Data Set 109D-type utilizes a 3-mA polar dc transmission arrangement which allows data to be transmitted at speeds up to 300 bauds.

1.03 This arrangement consists of one 28A1 Data Mounting for every 16 data sets, one 27A1 Data Unit for every 8 data sets, and an appropriate power source. The plugs and cables for connecting the customer-provided terminals (CPTs) to the data unit(s) are provided by the customer and should not exceed 50 feet in length. The cables for connecting the data mounting to the transmission facilities must be terminated (at the data mounting end) in a 50-pin connector such as that used with the A25B-type connector cable. The 28A1 Data Mounting, 27A1 Data Unit, and A25B-type connector cable are not supplied with the data set and must be ordered separately.

1.04 The data set and associated mounting apparatus may be located any place that is convenient for the customer and should be within 50 feet of the CPTs.

1.05 The Data Set 109D-type, 28A1 Data Mounting, and 27A1 Data Unit require no periodic maintenance after installation tests and adjustments have been completed. Data set options and requirements for matching loop resistances are accomplished by screw switch settings and strapping links at the time of installation.

2. PHYSICAL DESCRIPTION

2.01 This part covers the components and physical dimensions of Data Set 109D-type, 28A1 Data Mounting, and 27A1 Data Unit.

A. Data Set 109D-Type

2.02 Data Set 109D-type consists of a single AR-type circuit pack (CP) as shown in Fig. 1. It is approximately 5-1/2 inches high, 7 inches deep and 1/2 inch wide.

2.03 The power requirements for the data set are approximately 1.7 watts of $+24 \pm 3$ volts dc and 1.7 watts of -24 ± 3 volts dc. It has a current drain of approximately 70 mA. The voltages are delivered to the data set via the 28A1 Data Mounting.

B. 28A1 Data Mounting

2.04 The 28A1 Data Mounting (Fig. 2) consists of one 59C apparatus mounting, two KS-16786-L4 connectors (J1 and J2), one KS-16671-L1 plug (P3), sixteen 927D connectors (A1 through A16), and one terminal block. It is 6 inches high, 25 (or 23) inches wide, 10 inches deep, and weighs approximately 15 pounds. It is designed to mount in 23- or 25-inch racks. Space is provided on the back for mounting two 27A1 Data Units.

2.05 The dc voltages to be delivered to the data set via the data mounting must be supplied

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to the data mounting either externally or by a KS-20575 rectifier which must be ordered separately. A space is provided on the 28A1 Data Mounting for mounting a KS-20575 rectifier.

C. 27A1 Data Unit

2.06 The 27A1 Data Unit (Fig. 3) consists of eight KS-13674-L26 switches, eight KS-19087-L2 connectors (female), one terminal board, and one cable equipped with a KS-16785-L4 plug (50-pin), all of which are assembled on a mounting plate. It is designed to be mounted on the back of the 28A1 Data Mounting or behind the customer access door of a KS-20093 type cabinet. The 27A1 Data Unit requires no power source.

3. FUNCTIONAL DESCRIPTION

3.01 This part covers the functions of Data Set 109D-type, 28A1 Data Mounting, and 27A1 Data Unit when they are used in Data Set 109D-type multiple data set arrangements.

3.02 A block diagram of Data Set 109D-type multiple data set arrangement (using 16 Data Sets 109D-type, one 28A1 Data Mounting, two 27A1 Data Units, and one A25B-type connector cable) is shown in Fig. 4.

3.03 The transmission facilities are delivered to the 28A1 Data Mounting via the intermediate distribution frame (IDF) or connector block and the A25B-type connector cable. The cable is connected to the data mounting at plug P3.

3.04 The CPTs are connected to the 27A1 Data Units via the customer provided interface cables. These cables should not exceed 50 feet in length. The data units are connected to the data mounting by connecting the plugs (P1) of the data units to the jacks (J1 and/or J2) on the data mounting. The data unit plugs (P1) are connected to the data unit by a 5-1/2 foot long cable.

3.05 The 28A1 Data Mounting provides the wiring between the power source, plug P3, connector J1, connector J2, and the data sets.

A. Data Set 109D-Type

3.06 For a functional description of Data Set 109D-type, refer to the section entitled Data Set 109D-Type—Description (591-029-100).

B. 28A1 Data Mounting

3.07 The 28A1 Data Mounting is a multipurpose apparatus housing which will accommodate any thickness AR-type CP and AR-size data sets having power connections on pins 1, 8, and 20 and requiring external connection to pins 3, 5, 7, 10, and 14 through 19 only. In multiple data set arrangements, the 28A1 Data Mounting is used to house and deliver power to the data sets. It also provides the means for connecting the data sets to the transmission facilities (P3) and to the 27A1 Data Unit(s) (J1 and J2).

3.08 The interconnection diagram of Fig. 5 shows the 28A1 Data Mounting equipped with 16 109D-type Data Sets. Only the wiring necessary to this arrangement is shown in the diagram. The data mounting is electrically divided into two halves. Data sets 1 through 8 are associated with connector J1 and terminals 1, 2, and 3 of TB1. Data sets 9 through 16 are associated with connector J2 and terminals 4, 5, and 6 of TB1.

3.09 The terminal block (TB1) terminals 1 and 4 are for connection of +24 volts dc, terminals 2 and 5 are for -24 volts dc, and terminals 3 and 6 are for signal ground. Terminal 7 is not used, and terminal 8 is for frame ground.

3.10 When one source of power is used to supply both halves of the data mounting, terminals 1, 2, and 3 of TB1 must be strapped to terminals 4, 5, and 6, respectively, as shown in Fig. 5.

3.11 The electrical division of the data mounting permits the use of a separate power source for each half of the data mounting. In this case, the straps mentioned in 3.10 are omitted, one power source is connected to TB1 terminals 1, 2, and 3, and the second power source is connected to TB1 terminals 4, 5, and 6.

3.12 The KS-20575 rectifier, if used, has ample capacity to supply power to both halves of a data mounting equipped with 16 data sets. When part of the data mounting is used for arrangements other than the Data Set 109D-type multiple data set arrangement, the capacity of the KS-20575 rectifier may exceed the load requirements of the data mounting. In this case, other 28A1 Data Mounting halves may be added by strapping between the TB1 terminals, as long as the total

source drain does not exceed the rectifier limits (4 amps).

3.13 Connector P3 of the data mounting provides the means for connecting the data sets to the transmission facilities. This may be accomplished by use of an A25B-type connector cable. The connector on the cable is plugged into P3 on the data mounting. The other end of the cable is connected to the transmission facilities at a cross-connecting point such as an IDF or a connecting block.

3.14 Connectors J1 and J2 provide the means for connecting the data sets to the 27A1 Data Unit(s).

C. 27A1 Data Unit

3.15 The block diagram of Fig. 5 shows the 27A1 Data Unit. The data unit provides the interfacing necessary for connecting the EIA outputs of the CPTs to the data mounting. The plug on the data unit connecting cable is plugged into either J1 or J2 of the data mounting. The EIA outputs of the CPTs are connected to J1 through J8 of

the data unit by means of a customer-provided plug.

3.16 The leads from pins 5, 6, and 8 (CB, CC, and CF) of J1 through J8 are equipped with spade-tipped terminals. A lead (CD) from the customer side of the NORMAL-OFF switch is also provided and equipped with a spade-tipped terminal. These leads are optionally connected to the RS, ON, and/or CA screw terminals in accordance with the interface requirements of the particular arrangement.

3.17 The basic arrangements of these leads for both the 10-type Data Line Concentrator System (DATREX*) and private line (PL) use are shown in Table A. If the use of any other arrangement is desired, it must be locally engineered.

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3.18 The eight NORMAL-OFF switches are used at multiple data set arrangements of DATREX to prevent selection of that line by the concentrator. At PL multiple data set arrangements, Data Sets 109D-type are provided with an option which prevents squelching of the carrier. This causes the NORMAL-OFF switches at PL installations to be ineffective.

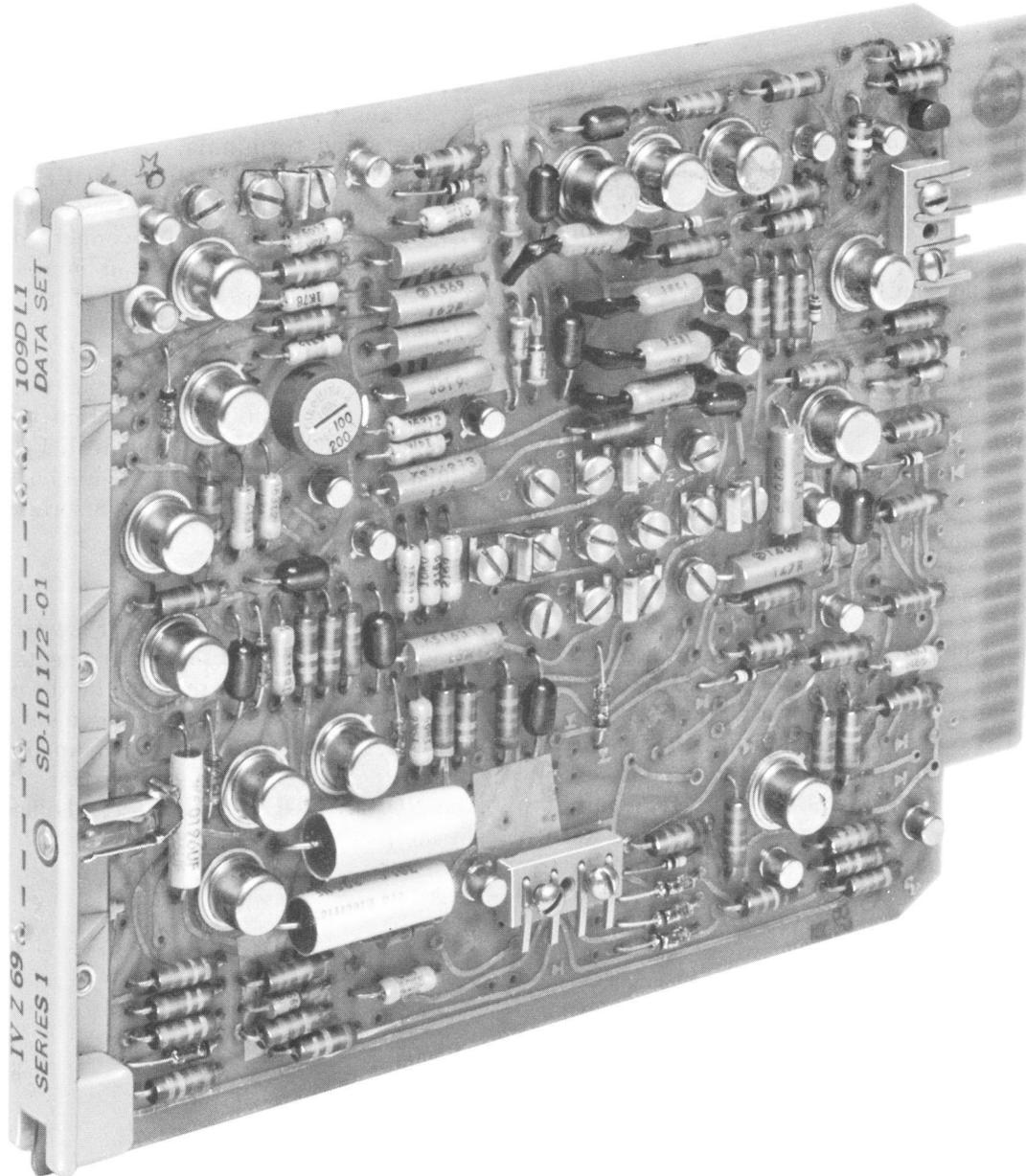


Fig. 1—Data Set 109D-Type

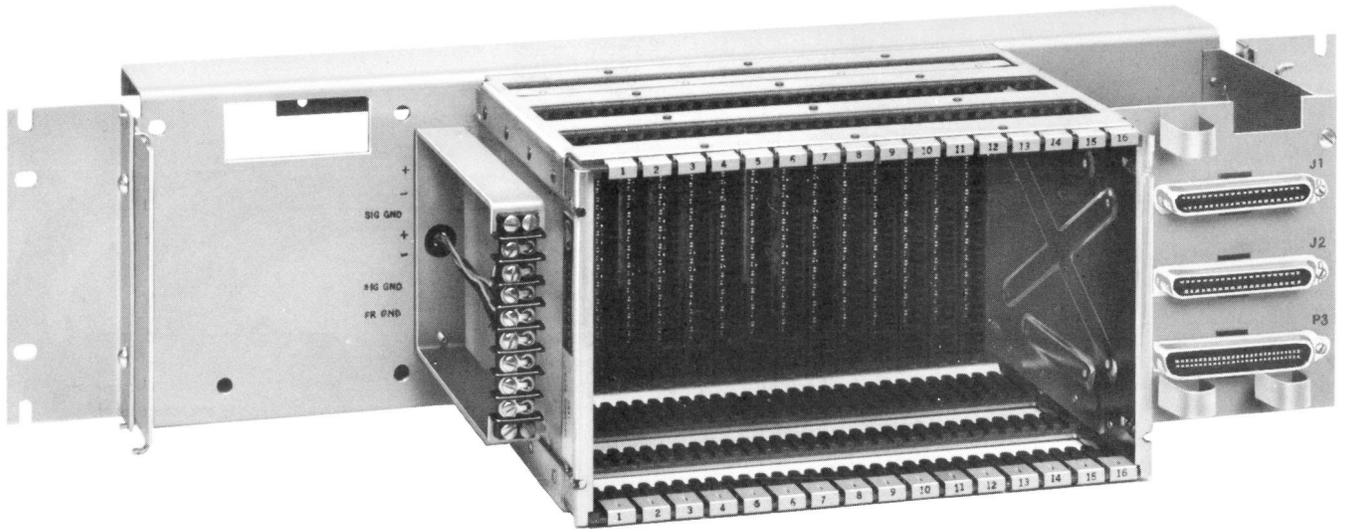
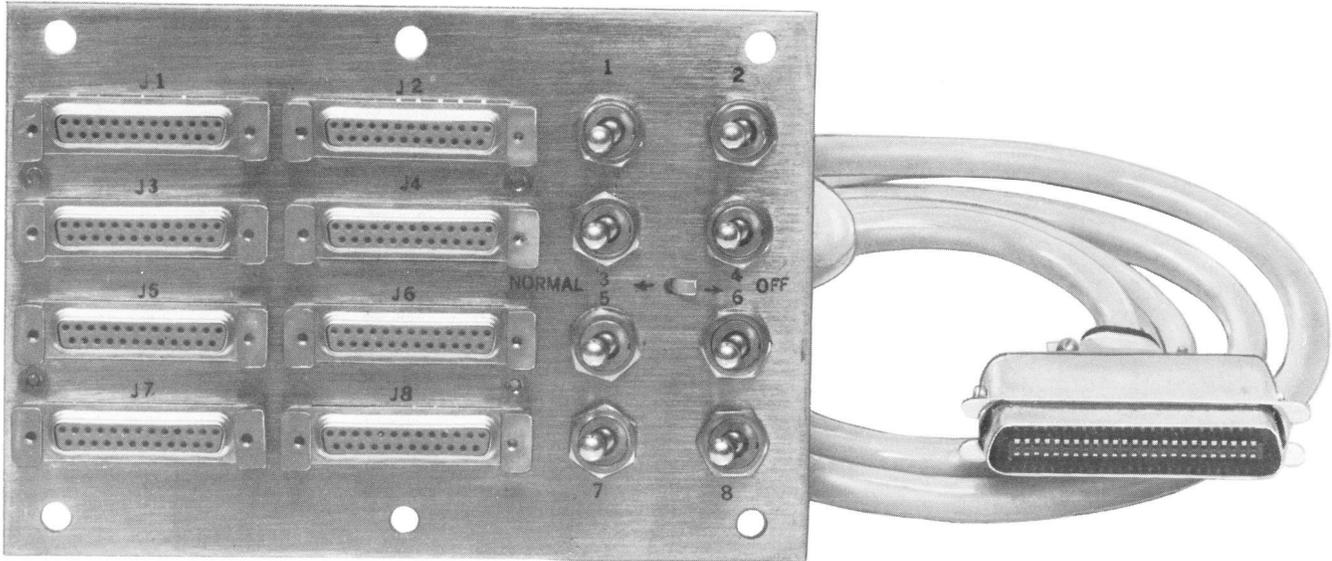
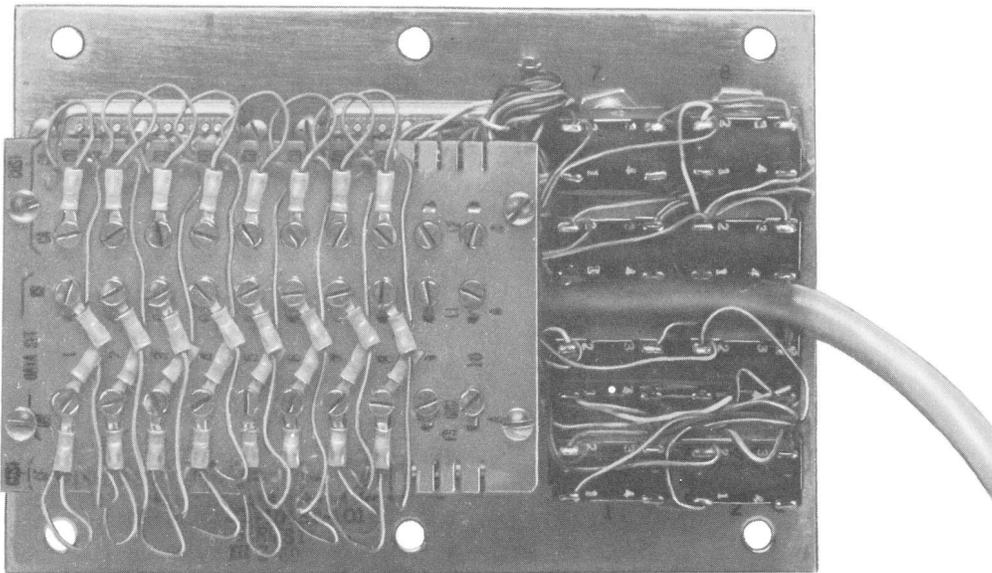


Fig. 2—28A1 Data Mounting



FRONT



REAR

Fig. 3—27A1 Data Unit

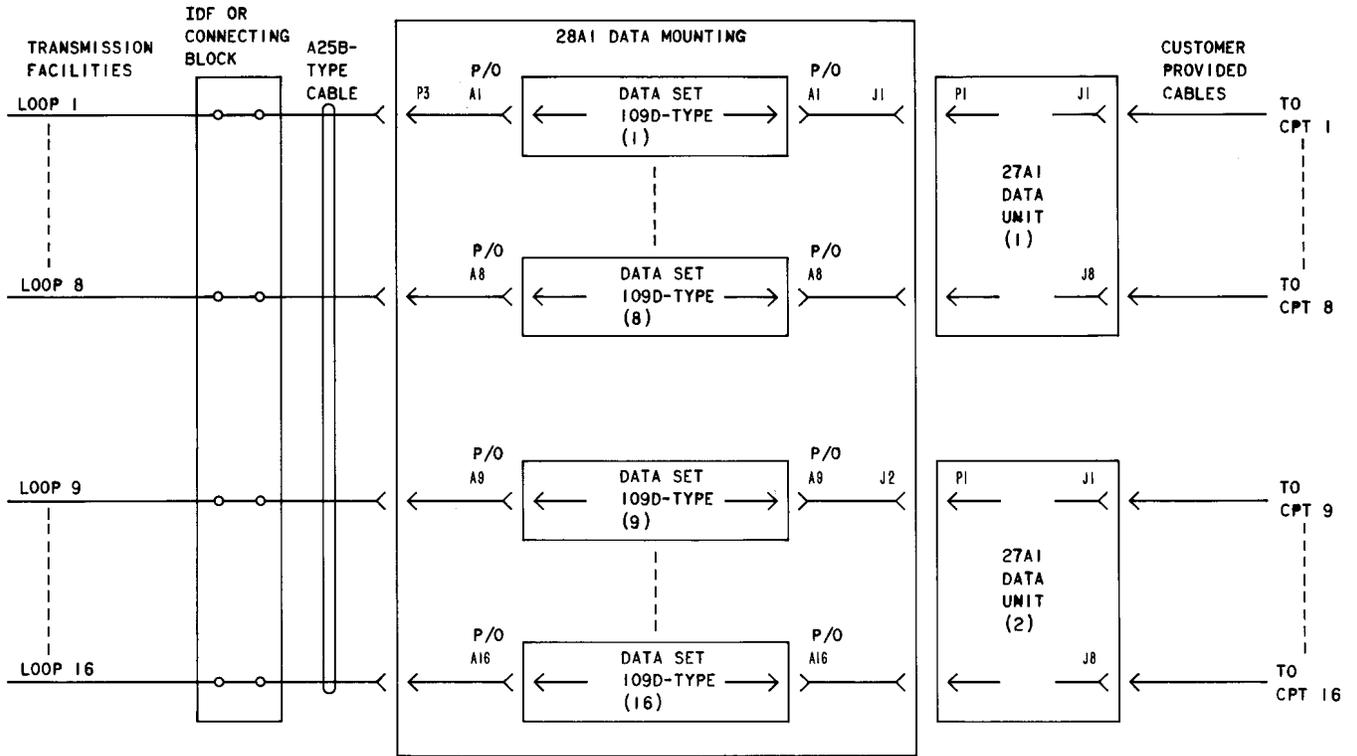


Fig. 4—Data Set 109D-Type—Multiple Data Set Arrangement—Block Diagram

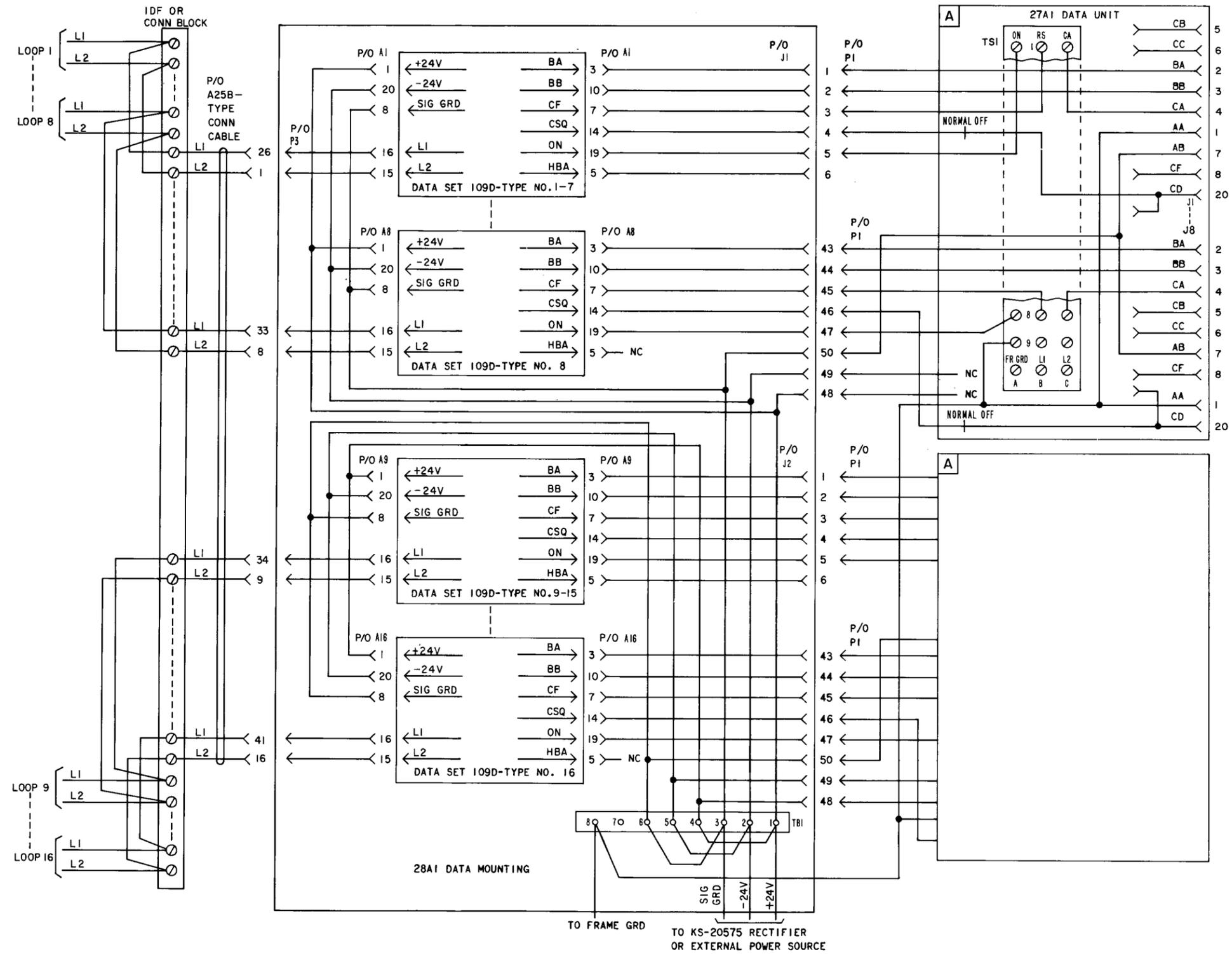


Fig. 5—Data Set 109D-Type—Multiple Data Set Arrangement—Interconnection Diagram

TABLE A
27A1 DATA UNIT OPTIONAL ARRANGEMENTS

OPTION	WIRING		FACTORY EQUIPPED	CONNECT SPADE-TIPPED LEADS TO SCREWS AS INDICATED			
				CC	CF	CB	CD
Z	CC and CF Terminations	Datrex	√	RS	ON		
Y		Private Line		ON	RS		
X	CB Termination	Open				†	
W		Looped to CA	√			CA	
V		Common to CC				‡	
T	CD Termination	Datrex: No signal from CPT	√				ON
S		Datrex: Signal from CPT Private Line: All Applications					†

† Insulate and Store.

‡ Connect to same screw as spade CC.