
DIGITAL TRANSMISSION SYSTEMS
DIGITAL MULTIPLEX-DEMULPLEX CIRCUIT, TYPE M1-2
CIRCUIT PACK AND POWER UNIT INSTALLATION
AND INITIAL TESTS

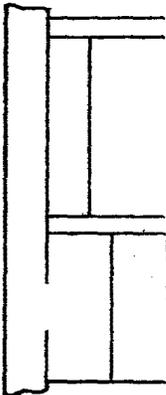
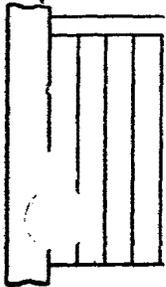
This section furnishes procedures for installing circuit packs and power units in the Digital Multiplex-Demultiplex Circuit, Type M1-2, and for making initial tests. All circuit packs are used with 48-volt and 24-volt options unless otherwise specified in the procedures. Four test cards are used with part of the procedures. Initial tests for muldem circuit packs can be performed only if the monitor circuit is equipped and working. Therefore, it is mandatory that installation procedures for the monitor circuit be performed first. Muldems are equipped in numerical sequence beginning with muldem No. 2. Muldem No. 1 is always reserved for initial tests of other muldems and for use as a standby muldem when the protection switching option is equipped. Therefore, this muldem must be put into service last. Connectors in mounting shelves should be inspected from front and rear before the circuit packs are installed to ensure that the contacts are not bent or misaligned. If replacement of designated circuit packs does not correct a trouble encountered during the installation procedures, the original circuit pack should be reinserted and the associated frame wiring should be checked. The circuit packs and power units must have their protectors removed from their connectors before insertion into the shelf, and the lock and designation strip on the shelf must be moved to the right in order to align the slots in the strip with those in the shelf before removing or inserting circuit packs. After the installation procedures are accomplished, the lock and designation strip should be moved to the left on all shelves. When the KS-20775, L1 or L2 error rate test set is specified as a signal source during the installation procedures, the J98710R-1 quasi-random signal source (Section 103-493-104) may be substituted for it.

This section is reissued to make numerous corrections and changes which are indicated by arrows. This issue does not affect Equipment Test Lists.

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TEST CARD

MONITC

CHART 1

INITIAL INSTALLATION OF MONITOR CIRCUIT

This procedure applies to the installation of the monitor circuit. Figures 1 through 3 illustrate the monitor circuit locations in the frame. Figure 4 illustrates the circuit pack arrangement.

APPARATUS:

- 1—Error Rate Test Set (ERTS) KS-20775, L1 or L2 (Section 103-493-109)
 - 1—MULDEM ALARM (EH13 or EH20) or MULDEM ALM and SWITCH (EH12 or EH19)
 - 1—Power Unit 61A or 61B
- Note:* Codes EH12, EH13, and 61A are for 48-volt option. Codes EH19, EH20, and 61B are for 24-volt option.
- 4—SYNDES (EH23)
 - 1—TRMTG COM CONT (EH24)
 - 1—RCVG COM CONT (EH3)
 - 1—CODE TRANSLATOR (EH4)
 - 1—51A-Type Lamp
 - 1—553A Lamp Extracting Tool
 - 6—Six-Foot P3BH Patch Cords
 - 4—One-Foot 3P6A Patch Cords

CHART 1 (Cont)

STEP

PROCEDURE

A. Preparation *INSERT OPEN PLUGS IN JACKS 1-4 MULTIDEM 1 AT DSX1 AND IN JACK OF MULTIDEM 1 AT DSX-2*

Note: No power units or circuit packs should be installed at this time except for alarm inhibit card (790A tool) in shelf 07, slot 09 (Fig. 4) of monitor circuit.

Caution: INPUT circuit breaker on the front panel of the 61-type power unit associated with a circuit pack should be set to OFF before removing or inserting the circuit pack into the M1-2 frame. Failure to observe this caution may result in damage to the circuit pack, particularly DRIV & TERM (DM110) and MD1-DSX1 CONNECT (DM111) circuit packs.

Note: Momentarily depress the ALARM RESET key on MON STATUS circuit pack if a circuit pack is accidentally disengaged during the installation procedures.

- 1 Verify that fuses have been installed in the frame fuse panel for monitor circuit, protection switching circuit, and muldem No. 1 (Fig. 5).

B. Circuit Pack Installation

Caution: The connectors at the rear of each circuit pack mounting slot in the frame are keyed to avoid insertion of a circuit pack into the wrong position. If any circuit pack cannot be readily inserted into a slot, recheck Fig. 4 in order to ensure that the circuit pack is the one specified for that slot.

Note: No office alarms will be present while the alarm inhibit card (790A tool) is installed in shelf 07, slot 09.

- 2 Install the following circuit packs (Fig. 4) into monitor circuit location.
 - (1) 6-MB INTERFACE (EH6)
 - (2) MON RCVG COM CONT (EH7)
 - (3) ERROR PROCESSING (EH8)
 - (4) ALARM CONTROL (EH9)
 - (5) TIMING GENERATION (EH10)
 - (6) 1.5-MB INTERFACE (GS3)
 - (7) TEST SIGNAL GENERATOR (GS4)
 - (8) MD1-DSX1 CONNECT (DM111) or DRIV & TERM (DM110)

CHART 1 (Cont)

STEP

PROCEDURE

Note: If DRIV & TERM (DM110) circuit pack is installed, patch each of the four INPUT jacks to the associated OUTPUT jack.

(9) Other DM coded circuit packs (Fig. 4) (shelf mounting slots 01 through 12)

Caution: INPUT circuit breaker on the front panel of the 61-type power unit must be set to OFF before inserting or removing the power unit.

Note: Procedures in Chart 2 must be followed when installing power units.

- 3 Install power units A and B into monitor circuit location.
- 4 Remove all 51A-type MULDEM ALM () lamps from MULDEM ALM & TEST circuit packs except MULDEM ALM (1) lamp.
- 5 Momentarily depress ALARM RESET key on MON STATUS circuit pack (Fig. 6).

Requirement: MULDEM ALM (1) lamp on MULDEM ALM & TEST circuit pack is lighted. No other lamps are lighted.

Note: If this requirement cannot be satisfied, check the lamp first, then replace the following circuit packs, one at a time, until the requirement is satisfied. Repeat Step 5 after each replacement.

- (1) ERROR PROCESSING (EH8)
- (2) ALARM CONTROL (EH9)
- (3) TIMING GENERATION (EH10)
- (4) 1.5-MB INTERFACE (GS3)
- (5) TEST SIGNAL GENERATOR (GS4)
- (6) MON RCVG COM CONT (EH7)
- (7) 6-MB INTERFACE (EH6)

If the MONITOR ALARM lamp on the MON STATUS circuit pack remains on, remove the ERROR PROCESSING (EH8) circuit pack and check continuity between pin 48 of ERROR PROCESSING circuit connector and frame ground. If continuity does not exist, locate open circuit by referring to SD-99530-01, FS10. If the requirement is still not satisfied, check all wiring on the monitor shelf.

- 6 Install SHELF BRIDGE (EH5) circuit pack in position one (Fig. 4).

CHART 1 (Cont)

STEP	PROCEDURE
7	<p>Momentarily depress ALARM RESET key.</p> <p>Requirement: MULDEM ALM (1) lamp is lighted. No other lamps are lighted.</p> <p>Note: If this requirement is not satisfied, check the lamp first, then replace the SHELF BRIDGE (EH5) circuit pack and repeat Step 7. If the requirement is still not satisfied, check monitor shelf wiring and all wiring between SHELF BRIDGE (EH5) circuit pack position and muldem No. 1 and No. 2 locations.</p>
8	<p>Install the following circuit packs (Fig. 7), INPUT and OUTPUT networks (Fig. 8), and equalizers (Fig. 9) in the order listed into muldem No. 1 location:</p> <ol style="list-style-type: none"> (1) MULDEM ALARM (EH13 or EH20) or MULDEM ALM & SWITCH (EH12 or EH19) (2) TRMTG COM CONT (EH24) (3) RCVG COM CONT (EH3) (4) CODE TRANSLATOR (EH4) (5) 4213- and 4214-type INPUT and OUTPUT networks (6) 951-type equalizers <p>Note: Codes EH12 and EH13 are for 48-volt option. Codes EH19 and EH20 are for 24-volt option.</p>
9	<p>Momentarily depress ALARM RESET key and then MULDEM TEST (1) key on MULDEM ALM & TEST circuit pack (Fig. 6).</p> <p>Requirement: The following lamps are lighted (Fig. 6):</p> <ol style="list-style-type: none"> (1) MULDEM TEST lamp lights for approximately ten seconds and then extinguishes. (2) DS2 DIAGNOSTIC lamp (3) MULDEM ALM (1) lamp (4) MDA lamp on the MULDEM ALARM or MULDEM ALM & SWITCH circuit pack (5) No other lamps are lighted. <p>Note: If this requirement is not satisfied, check the lamps first, then replace the following circuit packs, one at a time, until the requirement is satisfied. Repeat Step 9 after each replacement.</p>

CHART 1 (Cont)

STEP

PROCEDURE

- (1) SHELF BRIDGE (EH5)
- (2) RCVG COM CONT (EH3)
- (3) 6-MB INTERFACE (EH6)
- (4) ERROR PROCESSING (EH8)
- (5) ALARM CONTROL (EH9)
- (6) TIMING GENERATION (EH10)
- (7) DIAGNOSTIC (Fig. 6)
- (8) MULDEM ALARM or ♦MULDEM ALM & SWITCH♦
- (9) MULDEM ALM & TEST circuit pack (Fig. 6) which contains MULDEM TEST (1) key.

If the requirement is still not satisfied, check monitor shelf wiring and monitor wiring to muldem No. 1.

- 10 Install four SYNDES ♦(EH23)♦ circuit packs in muldem No. 1 location (Fig. 7).

Caution: *INPUT circuit breaker on the front panel of the 61-type power unit must be set to OFF before inserting or removing the power unit.*

Note: Procedures in Chart 2 must be followed when installing power unit.

- 11 Install power unit for muldem No. 1.
- 12 Momentarily depress MULDEM RESET key and then MULDEM TEST (1) key on MULDEM ALM & TEST circuit pack (Fig. 6).

Requirement: The following lamps (Fig. 6) should be lighted.

- (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes.
- (2) DS1 (1-4) DIAGNOSTIC lamps light in sequence.
- (3) DS2 DIAGNOSTIC lamp-
- (4) MULDEM ALM (1) lamp
- (5) MDA lamp on the MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack
- (6) No other lamps are lighted.

CHART 1 (Cont)

STEP	PROCEDURE
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Note: If this requirement is not satisfied, check the lamps first, then replace the following circuit packs one at a time until the requirement is satisfied. Repeat Step 12 after each replacement.

- (1) TIMING GENERATION (EH10)
- (2) ALARM CONTROL (EH9)
- (3) SHELF BRIDGE (EH5)
- (4) 1.5-MB INTERFACE (GS3)
- (5) ERROR PROCESSING (EH8)

If the requirement is still not satisfied, check monitor shelf wiring and wiring between monitor shelf and muldem No. 1.

- 13 At DSX-2 bay patch between OUT and IN jacks associated with muldem No. 1 location.
- 14 Connect the ERTS to a 110-volt ac power source.
- 15 Set the controls on the ERTS as follows:
 - (a) MODE to ERRORS
 - (b) SELF TEST to NORMAL
 - (c) SYNC MODE to AUTO
 - (d) DISPLAY INTERVAL (SEC) to HOLD
 - (e) COUNT INTERVAL (BITS) to 10^8
 - (f) For L2 only, ERROR BLOCK to OUT.
- 16 At the DSX-1, patch the ERTS OUTPUT jacks to the IN jacks associated with muldem No. 1.
- 17 Set the ERTS POWER switch to ON.
- 18 Patch the ERTS INPUT jack to the first DSX-1 OUT jack associated with muldem No. 1.
- 19 Momentarily operate the ERTS RESET/RESYNC switch.

Requirement: The RECEIVE STATUS and the OVERFLOW indicators are extinguished and the COUNT indicator is lighted.

CHART 1 (Cont)

STEP	PROCEDURE
20	After the COUNT indicator extinguishes, observe the counter.♦
	Requirement: ERTS indicates less than ten errors. This indication equates to an error rate of less than 10^{-7} , ie, less than 1 error in every 10,000,000 bits.
	Note: If this requirement is not satisfied, replace the following circuit packs one at a time until requirement is satisfied. Repeat Step 19 after each replacement.
	<ul style="list-style-type: none"> (1) SYNDES ♦(EH23)♦ . Replace only the syndes which is associated with output being tested (2) TRMTG COM CONT ♦(EH24)♦ (3) RCVG COM CONT (EH3) (4) CODE TRANSLATOR (EH4)
	If ERTS still indicates ten or more errors, check all frame wiring associated with muldem No. 1 location and wiring between DSX-1 bay, DSX-2 bay, and M1-2 frame which is associated with muldem No. 1 position. Also check wiring to MD1-DSX1 CONNECT (DM111) or DRIV & TERM (DM110) circuit pack.
21	Repeat Steps 18 through 20 for DSX-1 OUT jacks associated with second, third, and fourth SYNDES ♦(EH23)♦ circuit packs at muldem No. 1 position.
22	Remove MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack from muldem No. 1 position.
23	Measure error rate at four DSX-1 OUT jacks associated with muldem No. 1 SYNDES ♦(EH23)♦ circuit packs.
	Requirement: ERTS indicates less than ten errors.
	Note: If requirement is not satisfied, check shorting contacts of MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack shelf connector.
24	Reinsert MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack in muldem No. 1 position.
	Note: Office alarms will operate when circuit pack in Step 25 is removed.
25	Remove MD1-DSX1 CONNECT (DM111) or DRIV & TERM (DM110) circuit pack from monitor shelf.

CHART 1 (Cont)

STEP	PROCEDURE
26	<p>Measure error rate at four DSX-1 OUT jacks associated with muldem 1 SYNDES (EH23) circuit packs.</p> <p>Requirement: ERTS indicates less than ten errors.</p> <p>Note: If the requirement is not satisfied, check shorting contacts of MD1-DSX1 CONNECT (DM111) or DRIV & TERM (DM110) circuit pack shelf connector.</p>
27	<p>Reinsert MD1-DSX1 CONNECT (DM111) or DRIV & TERM (DM110) circuit pack in monitor shelf position.</p>
28	<p>Momentarily depress ALARM RESET key.</p> <p>Requirement: No lamps are lighted.</p> <p>Note: If this requirement is not satisfied, replace the following circuit packs one at a time until the requirement is satisfied. Repeat Step 28 after each replacement.</p> <ol style="list-style-type: none"> (1) SHELF BRIDGE (EH5) (2) 6-MB INTERFACE (EH6) (3) MON RCVG COM CONT (EH7) (4) ERROR PROCESSING (EH8) (5) ALARM CONTROL (EH9) (6) TIMING GENERATION (EH10) (7) 1.5-MB INTERFACE (GS3) <p>If the requirement is still not satisfied, check wiring.</p>
29	<p>Remove RCVG COM CONT (EH3) circuit pack from muldem No. 1 position.</p>
30	<p>Momentarily depress MULDEM TEST (1) key.</p> <p>Requirement: The following lamps are lighted (Fig. 6).</p> <ol style="list-style-type: none"> (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes. (2) RECEIVE (1-4) DIAGNOSTIC lamps light in sequence. (3) MULDEM ALM (1) lamp

CHART 1 (Cont)

STEP

PROCEDURE

- (4) MDA lamp on the MULDEM ALARM or **MULDEM ALM & SWITCH** circuit pack
- (5) No other lamps are lighted.

Note: If this requirement is not satisfied, check the lamps first, then replace the following circuit packs one at a time until the requirement is satisfied. Momentarily depress ALARM RESET key and repeat Step 30 after each replacement.

- (1) 6-MB INTERFACE (EH6)
- (2) MON RCVG COM CONT (EH7)
- (3) ERROR PROCESSING (EH8)
- (4) SHELF BRIDGE (EH5)
- (5) ALARM CONTROL (EH9)
- (6) TIMING GENERATION (EH10)

If the requirement is still not satisfied, check monitor shelf wiring.

- 31 Set front panel circuit breaker of muldem No. 1 power unit to OFF.
- 32 Momentarily depress MULDEM TEST (1) key.

Requirement: The following lamps are lighted (Fig. 6).

- (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes.
- (2) TRANSMIT (1-4) DIAGNOSTIC lamps light in sequence.
- (3) MULDEM ALM (1) lamp
- (4) MDA lamp on the MULDEM ALARM or **MULDEM ALM & SWITCH** circuit pack
- (5) No other lamps are lighted.

Note: If this requirement is not satisfied, check the lamps first, then replace the following circuit packs one at a time until requirement is satisfied. Momentarily depress ALARM RESET key and repeat Step 32 after each replacement.

- (1) ERROR PROCESSING (EH8)
- (2) 6-MB INTERFACE (EH6)

CHART 1 (Cont)

STEP

PROCEDURE

(3) MON RCVG COM CONT (EH7)

(4) ALARM CONTROL (EH9)

(5) TIMING GENERATION (EH10)

(6) 1.5-MB INTERFACE (GS3)

If the requirement is still not satisfied, check frame wiring.

33 Set front panel circuit breaker of muldem No. 1 power unit to ON.

34 At DSX-1 bay disconnect the ERTS output from the fourth IN jack associated with muldem No. 1.

35 Momentarily depress MULDEM TEST (1) key.

Requirement: The following lamps are lighted (Fig. 6).

(1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes.

(2) DS1 (4) DIAGNOSTIC lamp

(3) RECEIVE (1-3) DIAGNOSTIC lamps light in sequence.

(4) MULDEM ALM (1) lamp

(5) MDA lamp on the MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack

(6) No other lamps are lighted.

Note: If this requirement is not satisfied, ♦check the lamps first, then♦ replace the following circuit packs one at a time until the requirement is satisfied. Momentarily depress ALARM RESET key and repeat Step 35 after each replacement.

(1) ALARM CONTROL (EH9)

(2) TIMING GENERATION (EH10)

(3) ERROR PROCESSING (EH8)

36 Set front panel circuit breaker of muldem No. 1 power unit to OFF.

37 Momentarily depress MULDEM TEST (1) key.

Requirement: The following lamps are lighted (Fig. 6).

CHART 1 (Cont)

STEP	PROCEDURE
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- (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes.
- (2) TRANSMIT (1-3) DIAGNOSTIC lamps light in sequence.
- (3) DS1 (4) DIAGNOSTIC lamp
- (4) MULDEM ALM (1) lamp
- (5) MDA lamp on the MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack
- (6) No other lamps are lighted.

Note: If this requirement is not satisfied, ♦check the lamps first, then♦ replace the following circuit packs one at a time until requirement is satisfied. Momentarily depress ALARM RESET key and repeat Step 37 after each replacement.

- (1) ALARM CONTROL (EH9)
- (2) TIMING GENERATION (EH10)

- 38 Set front panel circuit breaker of muldem 1 power unit to ON.
- 39 At DSX-1 bay disconnect the ERTS output from the third IN jack associated with muldem No. 1.
- 40 Momentarily depress MULDEM TEST (1) key.

Requirement: The following lamps are lighted (Fig. 6).

- (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes.
- (2) DS1 (3 and 4) DIAGNOSTIC lamps light in sequence.
- (3) RECEIVE (1 and 2) DIAGNOSTIC lamps light in sequence.
- (4) MULDEM ALM (1) lamp
- (5) MDA lamp on the MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack
- (6) No other lamps are lighted.

Note: If this requirement is not satisfied, ♦check the lamps first, then♦ replace the ALARM CONTROL (EH9) circuit pack, momentarily depress ALARM RESET key, and repeat Step 40.

- 41 Set front panel circuit breaker of muldem No. 1 power unit to OFF.

CHART 1 (Cont)

STEP	PROCEDURE
42	Momentarily depress MULDEM TEST (1) key. <i>Requirement:</i> The following lamps are lighted (Fig. 6). (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes. (2) TRANSMIT (1 and 2) DIAGNOSTIC lamps light in sequence. (3) DS1 (3 and 4) DIAGNOSTIC lamps light in sequence. (4) MULDEM ALM (1) lamp (5) MDA lamp on the MULDEM ALARM or ♦MULDEM ALM & SWITCH♦ circuit pack (6) No other lamps are lighted. <i>Note:</i> If this requirement is not satisfied, ♦check the lamps first, then♦ replace the ALARM CONTROL (EH9) circuit pack, momentarily depress ALARM RESET key, and repeat Step 42.
43	Set front panel circuit breaker of muldem 1 power unit to ON.
44	At DSX-1 bay disconnect the ERTS output from the second IN jack associated with muldem No. 1.
45	Momentarily depress MULDEM TEST (1) key. <i>Requirement:</i> The following lamps are lighted (Fig. 6). (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes. (2) DS1 (2 through 4) DIAGNOSTIC lamps light in sequence. (3) RECEIVE (1) DIAGNOSTIC lamp (4) MULDEM ALM (1) lamp (5) MDA lamp on the MULDEM ALARM ♦or MULDEM ALM & SWITCH♦ circuit pack (6) No other lamps are lighted. <i>Note:</i> If this requirement is not satisfied, ♦check the lamps first, then♦ replace the ALARM CONTROL (EH9) circuit pack, momentarily depress ALARM RESET key, and repeat Step 45.
46	Set front panel circuit breaker of muldem 1 power unit to OFF.

CHART 1 (Cont)

STEP	PROCEDURE
47	Momentarily depress MULDEM TEST (1) key. Requirement: The following lamps are lighted (Fig. 6). (1) MULDEM TEST lamp lights for approximately 10 seconds and then extinguishes. (2) TRANSMIT (1) DIAGNOSTIC lamp (3) DS1 (2 through 4) DIAGNOSTIC lamps light in sequence. (4) MULDEM ALM (1) lamp (5) MDA lamp on the MULDEM ALARM or \blacklozenge MULDEM ALM & SWITCH \blacklozenge circuit pack (6) No other lamps are lighted. Note: If this requirement is not satisfied, \blacklozenge check the lamps first, then \blacklozenge replace the ALARM CONTROL (EH9) circuit pack, momentarily depress ALARM RESET key, and repeat Step 47.
48	Momentarily depress ALARM RESET key.
49	Remove alarm inhibit card (790A tool) from \blacklozenge shelf 07, slot 09 \blacklozenge of monitor circuit and replace with FRAME ALARM (GS1) circuit pack.
50	Momentarily depress ALARM RESET key and then MULDEM TEST (1) key. Requirement: In addition to lamps lighted in Step 47, office alarms operate. Note: If this requirement is not satisfied, replace the FRAME ALARM (GS1) circuit pack, momentarily depress ALARM RESET key, and repeat Step 50.
51	Momentarily depress ALARM RESET key.
52	Remove 51A-type lamp from MULDEM ALM (1) lamp position on MULDEM ALM & TEST circuit pack (Fig. 6). Caution: <i>INPUT circuit breaker on the front panel of the 61-type power unit must be set to OFF before inserting or removing the power unit.</i>
53	Remove circuit packs and power unit from muldem 1 position.
54	Disconnect ERTS from DSX-1 bay. Caution: <i>Removing any patch cords other than those used in this procedure may disrupt service.</i>

CHART 1 (Cont)

STEP	PROCEDURE
55	Remove patch from DSX-2 bay installed in Step 13.
56	Remove patch cords from DRIV & TERM (DM110) circuit pack if installed.

CHART 2

INSTALLATION OF POWER UNITS

This procedure applies to the installation of power unit 61A or 61B. Figures 1 through 3 illustrate the muldem and monitor circuit locations in the frame. Figures 4 and 7 illustrate the power unit position relative to the muldem or monitor circuit associated with it. The minimum load for the power unit, consisting of the minimum circuit packs required for the associated monitor circuit or muldem, must be installed before installation of the power unit.

APPARATUS:

Digital Voltmeter KS-20599 or equivalent

STEP	PROCEDURE
	A. Preparation
1	Verify that fuses have been installed in the frame fuse panel (Fig. 5).
	B. Power Unit Installation
2	Verify that a minimum number of circuit packs required for the associated monitor circuit (Chart 1) or muldem (Chart 3, 4, 6, 8, or 9) are installed in the proper location.
	<i>Caution: The power unit must never be operated without the minimum number of circuit packs installed. Power unit 61A must be installed only in a frame supplied with -48 volt power. Power unit 61B must be installed only in a frame supplied with -24 volt power.</i>
3	Set INPUT circuit breaker on front panel of power unit to OFF.
4	Lift retaining bar and insert the power unit into the shelf (Fig. 4 or 7).
	Requirement: ALARM lamp on power unit front panel is lighted.

CHART 2 (Cont)

STEP

PROCEDURE

Note: If ALARM lamp is not lighted, check fuse to frame power input, power unit lamp, office distribution fuses, and frame wiring. If no fault is found, replace the power unit.

5 Set INPUT circuit breaker on power unit front panel to ON.

Requirement: ALARM lamp on power unit front panel is extinguished.

Note: If the lamp is not extinguished, replace the power unit.

6 Use a digital voltmeter to check the two output voltages at pin jacks on power unit front panel.

Requirement: The following two voltages are present:

(1) +5.05 \pm 0.25 volts dc

(2) -12 \pm 1.0 volts dc

Note: If this requirement is not met, replace the power unit.

CHART 3

INITIAL INSTALLATION OF PROTECTION SWITCHING CIRCUIT
(NO SERVICE ON FRAME)

This procedure is used when initially equipping the protection switching circuit in a new frame. The monitor circuit (Chart 1) must be equipped prior to the protection switching circuit and both circuits must be equipped before the muldems (Chart 4). Figures 1 through 3 illustrate the circuit locations in the frame.

APPARATUS:

1—Error Rate Test Set (ERTS) KS-20775, L1 or L2 (Section 103-493-109)

5—Six-Foot P3BH Patch Cord

1—258C Dummy Plug

1—553A Lamp Extracting Tool

CHART 3 (Cont)

STEP

PROCEDURE

A. Preparation *Insert open PLUGS at in Jacks 1-4 of muldem 2 at DSX-1 and in Jack of muldem 2 at DSX-2*

Caution: INPUT circuit breaker on the front panel of the 61-type power unit associated with a circuit pack should be set to OFF before removing or inserting the circuit pack into the M1-2 frame. Failure to observe this caution may result in damage to the circuit pack, particularly DRIV & TERM (DM110) circuit pack.

Note: Momentarily depress the ALARM RESET key on MON STATUS circuit pack if a circuit pack is accidentally disengaged during the installation procedures.

- 1 At DSX-1 bay install permanent cross-connections between OUT and IN jacks associated with muldem 1 position (Section 365-301-101).
- 2 At DSX-2 bay install permanent cross-connections between OUT and IN jacks associated with muldem 1 position (Section 365-301-101).

Note: Mounting slots (Fig. 7) for the muldem power unit and circuit packs must be empty for all muldems in the frame. All mounting slots must be empty except monitor circuit circuit packs installed in Charts 1 and 2.

- 3 Verify that fuses have been installed in the frame fuse panel (Fig. 5).

B. Circuit Pack Installation

Caution: The connectors at the rear of each circuit pack mounting slot in the frame are keyed to avoid insertion of a circuit pack into the wrong position. If any circuit pack cannot be readily inserted into a slot, recheck Fig. 4 and 7 in order to ensure that the circuit pack is the one specified for that slot.

Note: The ACO key on the MON STATUS circuit pack (Fig. 6) should be operated in the event that any alarms are operated during the installation procedure. The frame alarm lamp must extinguish. If this requirement is not satisfied, replace the following circuit packs one at a time, if equipped, until the requirement is satisfied. Momentarily depress the ALARM RESET key on MON STATUS circuit pack after each replacement.

- (1) MON STATUS (DM100 or DM101)
 - (2) FRAME ALARM (GS1)
 - (3) ALARM CONTROL (EH9)
 - (4) SWITCH CONTROL (EH11)
- 4 Install the following circuit packs (Fig. 7) into muldem 1 position.
 - (1) Four SYNDES (EH23) into mounting slots 02 through 05

CHART 3 (Cont)

STEP

PROCEDURE

- (2) TRMTG COM CONT ♦(EH24)♦ into mounting slot 06
- (3) RCVG COM CONT (EH3) into mounting slot 07
- (4) CODE TRANSLATOR (EH4) into mounting slot 08
- (5) ♦MULDEM ALM & SWITCH♦ (EH12 or EH19) into mounting slot 01.

Note: Code EH12 is for the 48-volt option. Code EH19 is for the 24-volt option.

- 5 Install a 51A-type lamp in MULDEM ALM (1) lamp position on MULDEM ALM & TEST circuit pack (Fig. 6).
- 6 Momentarily depress the ALARM RESET key on MON STATUS circuit pack (Fig. 6).

Requirement: Within 10 seconds the office alarms operate and the following lamps (Fig. 6) are lighted.

- (1) The DS1 (1-4) DIAGNOSTIC lamps light in sequence.
- (2) DS2 DIAGNOSTIC lamp
- (3) MULDEM ALM (1) lamp
- (4) MDA lamp on the ♦MULDEM ALM & SWITCH♦ (EH12 or EH19) circuit pack
- (5) No other lamps are lighted.

Note: If this requirement is not satisfied, ♦check the lamps first, then♦ replace the following circuit packs one at a time until the requirement is satisfied. Repeat Step 6 after each replacement.

- (1) SHELF BRIDGE (EH5)
- (2) RCVG COM CONT (EH3)
- (3) ♦MULDEM ALM & SWITCH♦ (EH12 or EH19)

Caution: INPUT circuit breaker on the front panel of the 61-type power unit must be set to OFF before inserting or removing the power unit.

Note: The procedures in Chart 2 must be followed when installing the power unit.

- 7 Install power unit (Fig. 7) associated with muldem 1 position.