

**DIGITAL FACILITY ACCESS FRAME/CABINET
DESCRIPTION
NO. 1A AND 1B NETWORK CONTROL POINT
COMMON CHANNEL SIGNALING SYSTEMS**

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL	2	F. AC Power Unit Mounting	11
A. Introduction	2	3. FUNCTIONAL DESCRIPTION	11
B. Purpose	2	A. <i>DATAPHONE</i> [*] Z2556A Data Ser- vice Unit	12
2. PHYSICAL DESCRIPTION	2	B. AC Distribution Panel Units	12
DIGITAL FACILITY ACCESS FRAME (J3F010A)	2	C. Digital Service Adapter	13
A. Digital Service Unit Mountings	3	D. Control Panel Unit	13
B. AC Distribution Panel Units	4	E. AC Power Units	13
C. Channel Service Unit Mountings	5	F. Fuse and Alarm Unit	13
D. Digital Service Adapter Unit	5	G. Filter Unit	14
E. Control Panel Unit	7	H. Fuse Panel and Alarm Control Unit	14
F. AC Power Unit Mounting	7	I. Alarm Unit	15
G. Fuse and Alarm Unit	8	4. GLOSSARY	16
H. Filter Unit	8	Figures	
DIGITAL FACILITY ACCESS/ALARM CABINET (J3F010C)	9	1. Digital Facility Access Frame (J3F010A)	3
A. Fuse Panel and Alarm Control Unit	9	2. Digital Service Unit Mounting	4
B. Alarm Unit	10	3. Data Service Unit Circuit Pack	5
C. Digital Service Unit Mountings	10	4. Data Service Unit Front Panel	6
D. AC Distribution Panel Units	11	5. AC Distribution Panel Unit	6
E. Digital Service Adapter Unit	11	6. Digital Service Adapter Unit	7

* Registered trademark of AT&T.

	CONTENTS	PAGE
7.	Control Panel Unit	7
8.	AC Power Unit Mounting	8
9.	Fuse and Alarm Unit	8
10.	Digital Facility Access/Alarm Cabinet (J3F010C)	9
11.	Fuse Panel and Alarm Control Unit	10
12.	Alarm Unit	10
13.	Digital Facility Access Circuit Functional Diagram	12

1. GENERAL

A. Introduction

1.01 This AT&T Practice provides a physical and functional description of a J3F010A digital facility access frame (SD-3F006-01) and a J3F010C digital facility access/alarm cabinet (SD-3F023-01). A J3F010C digital facility access/alarm cabinet is used in a 1BNCP (No. 1B network control point) office. A J3F010A digital facility access frame or a J3F010C digital facility access/alarm cabinet is used in a 1ANCP (No. 1A network control point) office. The 1ANCPs equipped with an AT&T 3B20D model 1 computer use the J3F010A digital facility access frame. The 1ANCPs equipped with an AT&T 3B20D model 3 computer use the J3F010C digital facility access/alarm cabinet. The 1ANCPs and 1BNCPs are hereafter referred to in this practice as NCPs (network control points).

1.02 This AT&T Practice is reissued to include changes to the digital facility access frame and digital facility access/alarm cabinet. The 500B digital service unit and the 550A channel service unit are reclassified MD (manufacture discontinued) and being replaced by the *DATAPHONE* Z2556A DSU (data service unit). This is a general revision, and as such, no revision arrows have been used to denote changes.

1.03 An NCP is an office in a CCS (common channel signaling) network that contains the hardware, software, and data base information used to

provide a variety of custom routing and billing services. Service-related queries from offices in a CCS network are routed using the CCS packet switching technique to an NCP where replies are formulated and returned to the originating offices.

1.04 An NCP interfaces with a CCS network via 56-kbps (kilobits per second) digital A-links (access signaling links) and a ring architecture. The ring architecture is based on the CNI (common network interface) and IMS (interprocess message switch) subsystems consisting of link nodes and ring peripheral controller nodes.

B. Purpose

1.05 The purpose of the digital facility access frame and the digital facility access/alarm cabinet is as follows:

- (a) Provide a maximum of 10 digital facility access circuits (An NCP currently uses a maximum of only eight)
- (b) Provide signal level translations between the ring architecture (link node) and the digital transmission facility
- (c) Monitor the power status of the frame/cabinet
- (d) Provide scan point indications to the AT&T 3B20D computer to report power status
- (e) Energize the NCP office alarms when there is a power failure in the frame/cabinet.

The digital facility access/alarm cabinet also collects aisle, system, and power plant alarms and provides the appropriate audible and visual indications.

2. PHYSICAL DESCRIPTION

DIGITAL FACILITY ACCESS FRAME (J3F010A)

2.01 The digital facility access frame (J3F010A), used in 1ANCPs equipped with the 3B20D model 1 computer, is shown in Fig. 1. A digital facility access frame is a 26-inch wide single bay, 18-inch deep, 7-foot high standard framework assembly (ED-5A001-70, G4). It operates on -48 Vdc as provided by

the power distribution frame. The digital facility access frame houses the following units:

- (a) Digital service unit mountings 0 and 1
- (b) AC distribution panel units 0 and 1
- (c) Channel service unit mountings 0 and 1
- (d) Digital service adapter unit
- (e) Control panel unit
- (f) AC power unit mounting
- (g) Fuse and alarm unit
- (h) Filter unit.

A. Digital Service Unit Mountings

2.02 The digital facility access frame is equipped with digital service unit mountings 0 and 1 as shown in Fig. 1. Each digital service unit mounting (Fig. 2) has positions to house a maximum of five *DATAPHONE Z2556A* DSUs (data service units). Currently, each digital service unit mounting in an NCP may house a maximum of only four DSUs and a minimum of one DSU. The Z2556A DSU replaces the 500B digital service unit and the 550A channel service unit. The 500B digital service unit and the 550A channel service unit were reclassified MD (manufacture discontinued). The digital service unit mounting 0 has positions to house data service units 01 through 05. Digital service unit mounting 1 has positions to house data service units 11 through 15.

2.03 Each Z2556A DSU is equipped with a *CT** 8000 adapter kit. A CT 8000 adapter kit consists of a special mounting bracket used to secure the DSU in place and a lead adapter for the line side of the DSU. The lead adapter interfaces the network jack (modular design) at the rear of a Z2556A DSU to a nine-pin cable connector.

2.04 A Z2556A DSU is 1.95 inches high, 5.75 inches wide, and 9.6 inches deep. A Z2556A DSU consists of a plug-in circuit pack and a front panel as

* Trademark of Commutech Incorporated.

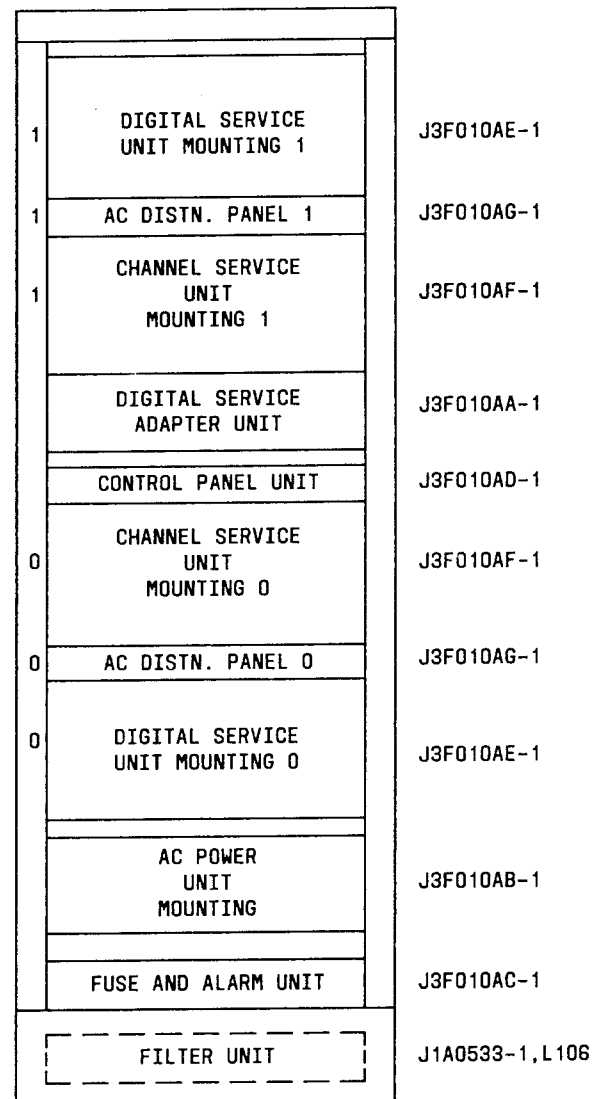


Fig. 1—Digital Facility Access Frame (J3F010A)

shown in Fig. 3. The rear edge of the circuit pack contains the following:

- (a) POWER connector
- (b) DATA TERMINAL interface connector
- (c) NETWORK jack.

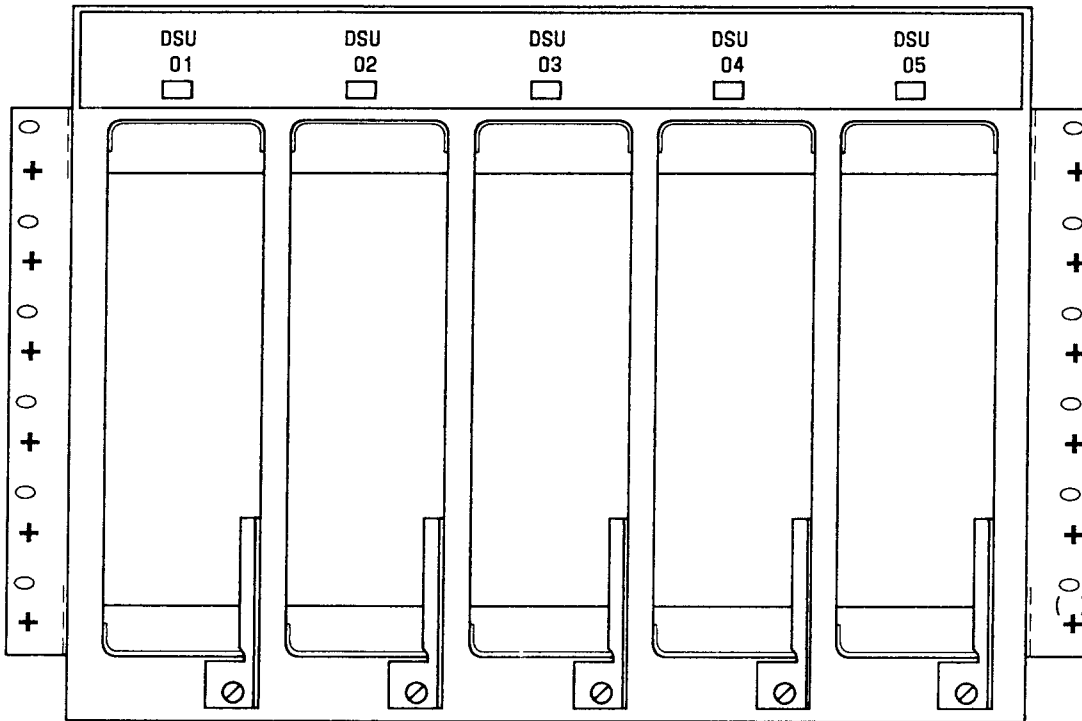


Fig. 2—Digital Service Unit Mounting

2.05 The front panel (Fig. 4) contains the following:

- (a) LCD (liquid-crystal display) area
- (b) LED (light-emitting diode)
- (c) Five rubber-dome, push-button, test switches
- (d) Recessed handle.

The five push-button test switches are momentary contact type switches.

2.06 A Z2556A DSU is powered by 120 Vac as obtained from ac distribution panel unit 0 or 1 via a three conductor power cord. The Z2556A DSUs housed in digital service unit mounting 0 obtain 120 Vac from ac distribution panel unit 0 and Z2556A DSUs housed in digital service unit mounting 1 obtain 120 Vac from ac distribution panel unit 1.

2.07 Cable assemblies ED-3F004-30,G18 and ED-3F004-30,G22 are used to connect a Z2556A DSU to a digital service adapter (TF5 circuit pack)

located on the digital service adapter unit. An ED-3F004-30,G18 cable assembly is connected to the NETWORK jack at the rear of a Z2556A DSU via a lead adapter contained in a CT 8000 adapter kit. An ED-3F004-30,G22 cable assembly is connected to the DATA TERMINAL interface connector at the rear of a Z2556A DSU.

B. AC Distribution Panel Units

2.08 The digital facility access frame is equipped with ac distribution panel units 0 and 1 as shown in Fig. 1. Each ac distribution panel unit (Fig. 5) consists of fused double ac receptacles (1G-5262) 1 through 5 and molex plug PAG (19-09-2061) on the rear panel. The molex plug PAG is equipped with five terminals that are connected to the five double ac receptacles. Five 21A fuse blocks, each equipped with a 70G (1/2 amp) fuse, are located on the front panel.

2.09 The molex plug PAG is connected externally by an ED-3F004-30,G25 cable assembly to an ac power unit. The ac distribution panel unit 0 is connected to ac power unit 0. The ac distribution panel unit 1 is connected to ac power unit 1.

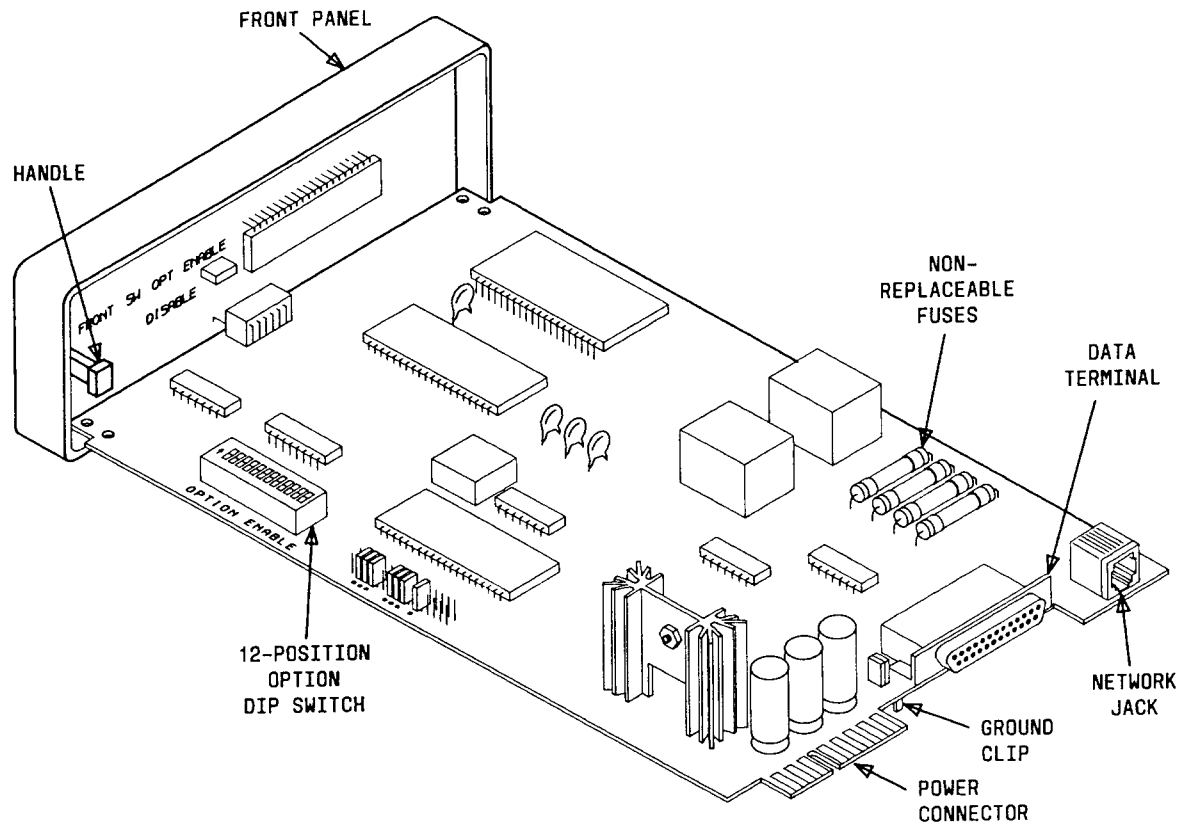


Fig. 3—Data Service Unit Circuit Pack

C. Channel Service Unit Mountings

2.10 The digital facility access frame is equipped with channel service unit mountings 0 and 1 as shown in Fig. 1. Each channel service unit mounting is equipped with a terminal strip (P1) located at the rear of the unit. The terminal strip P1 is used to connect ED-3F004-30, G18 cable assemblies from digital service adapters to cabling from the digital transmission facility.

D. Digital Service Adapter Unit

2.11 The digital service adapter unit (Fig. 6) consists of two 115C apparatus mountings arranged to hold ten digital service adapters (DSA01 through DSA05 and DSA11 through DSA15) and the required backplane wiring. Currently, a digital service adapter unit in an NCP houses a maximum of eight digital service adapters.

2.12 A digital service adapter (TF5 circuit pack) consists of component apparatus mounted on a plug-in circuit board assembly. A digital service adapter operates on -48 Vdc obtained from the fuse and alarm unit and includes a power pack to convert the -48 Vdc to ± 5 Vdc required for the operation of the majority of the integrated circuits on the circuit pack.

2.13 The backplane assembly of a digital service adapter unit (ED-3F021-30) has ten connector fields. Each connector field is grouped into five ports for connectorized cabling. All input and output wiring to the backplane is made with connectorized cables. The following cable assemblies are used to connect a TF5 circuit pack to units on the digital facility access frame:

- (1) Cable assembly ED-3F004-30,G22 connects port 1 to a Z2556A DSU (DATA TERMINAL connector)

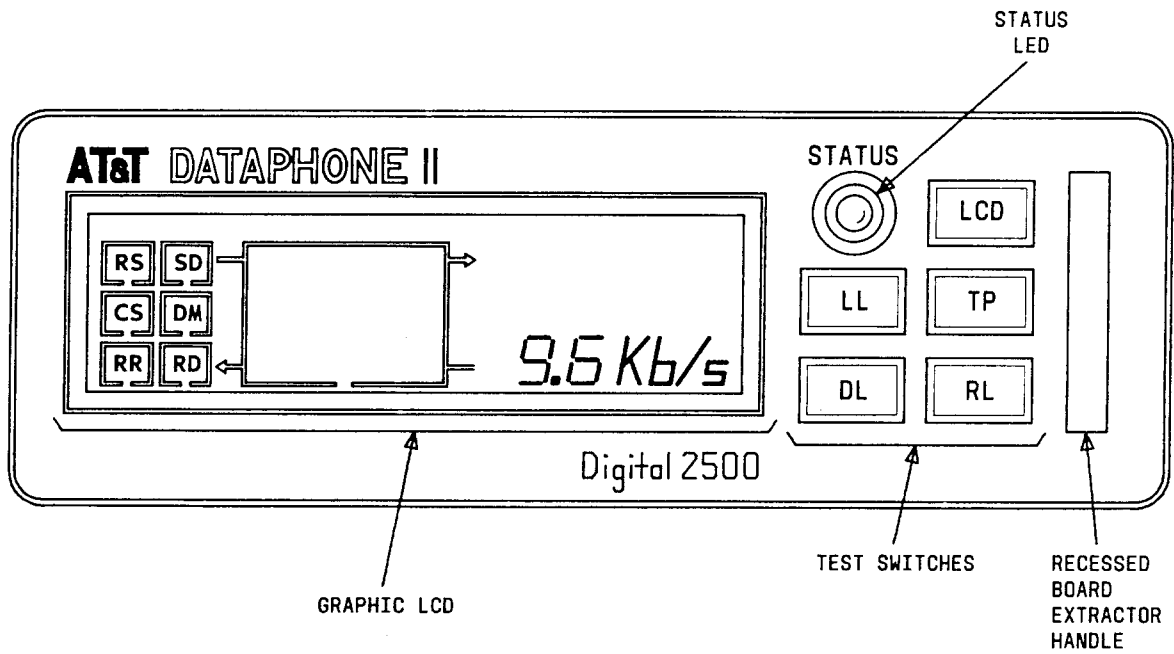


Fig. 4—Data Service Unit Front Panel

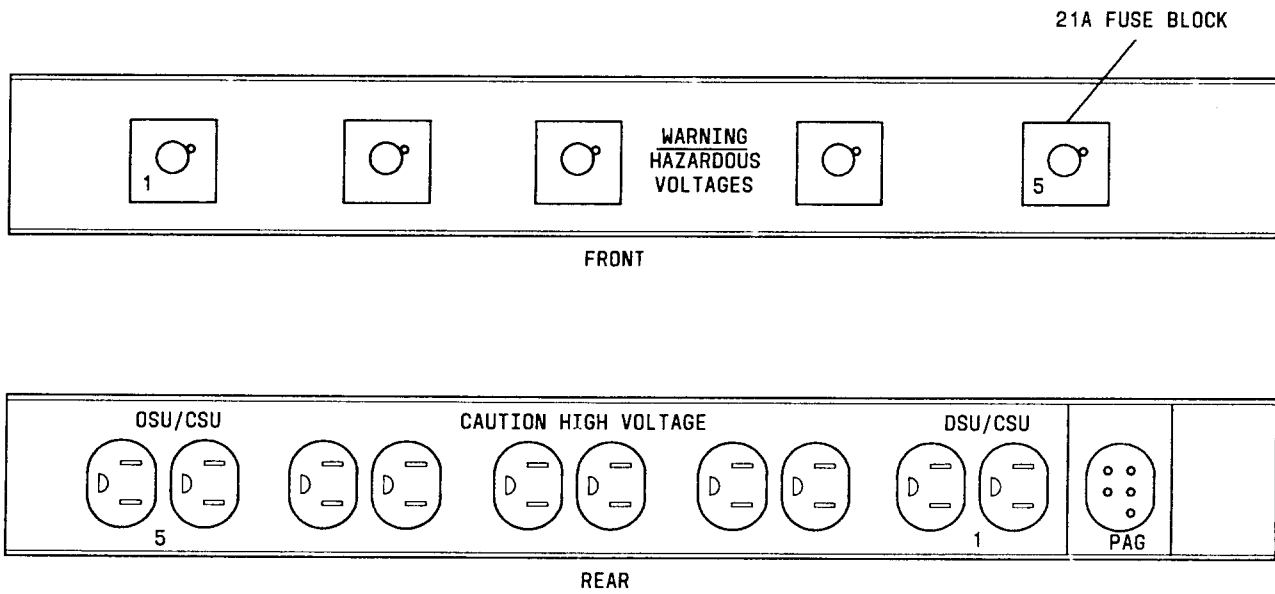


Fig. 5—AC Distribution Panel Unit

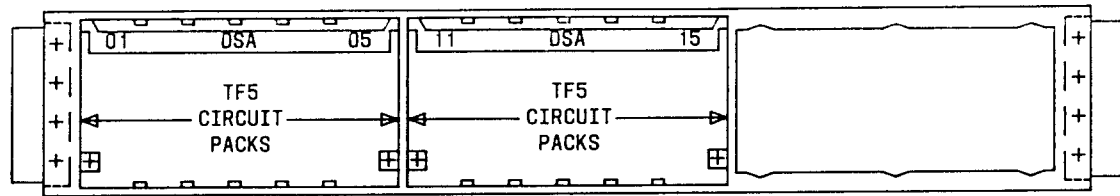


Fig. 6—Digital Service Adapter Unit

- (2) Cable assembly ED-3F004-30,G41 connects port 2 to a link node
- (3) Cable assembly ED-3F004-30,G18 connects port 3 to a Z2556A DSU (NETWORK jack) via a line adapter
- (4) Cable assembly ED-3F004-30,G18 connects port 4 to the transmission facility connector field (P1) mounted on the rear of a channel service unit mounting
- (5) Cable assembly ED-3F004-30,G21 connects port 5 to the fuse and alarm unit.

2.14 Each digital service adapter is connected via connectorized cabling to a Z2556A DSU. Digital service adapters 01 through 05 are connected to Z2556A DSUs in digital service unit mounting 0. Digital service adapters 11 through 15 are connected to Z2556 DSUs in digital service unit mounting 1.

E. Control Panel Unit

2.15 The control panel unit (Fig. 7) provides the following:

- (a) 238AM-type jacks for two portable data terminals (TTY A A1 and TTY B B1) and a spare (SPARE 1 and 2)

- (b) 223AM-type jacks for an office telephone circuit (TEL OFFICE)
- (c) A 234C- and 361C-type jack for a 660-type telephone circuit (TEL 660 PANEL)
- (d) A 624C4-type alarm cutoff key (ALARM CUTOFF)
- (e) A 624M4-type lamp test key (LAMP TEST)
- (f) An M1-type power alarm lamp (PWR ALM) mounted in a 624C4-type power alarm reset key (PWR ALM RESET)
- (g) Terminal strips (ADA, ADB, and ADC) located on the rear of the unit (not shown in Fig. 7).

The jack circuits are currently not used in an NCP office.

F. AC Power Unit Mounting

2.16 The ac power unit mounting (Fig. 8) is a 132 apparatus mounting arranged to hold ac power unit PU0, ac power unit PU1, and the required backplane wiring. Each ac power unit consists of a 495H1 and a 393A power module. The two frame power feeders are hard wired from the fuse and alarm unit to PU0 and PU1. The PU0 is connected to

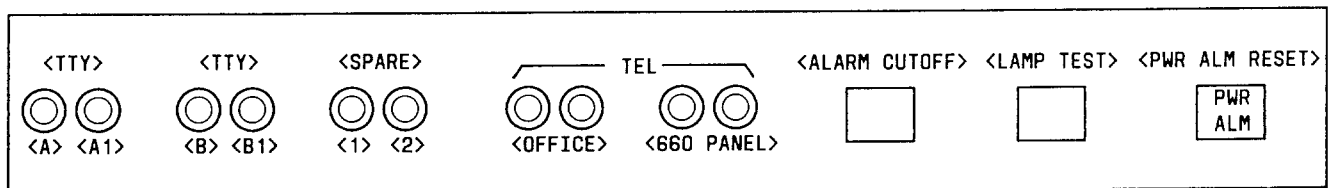


Fig. 7—Control Panel Unit

ac distribution panel unit 0 (molex plug PAG), and PU1 is connected to ac distribution panel unit 1 (molex plug PAG) via connectorized cabling.

G. Fuse and Alarm Unit

2.17 The fuse and alarm unit (Fig. 9) consists of the following:

- (a) Four AJ63-type alarm relays (MJ1, MJ2, MN1, and MN2)
- (b) Two 30B fuse blocks and four 24C fuse blocks
- (c) One M1-type fuse alarm lamp (FA)
- (d) Terminal strips (ACA, ACB, 48V A, and 48V B) located on the rear of the unit (not shown in Fig. 9).

2.18 The two -48 Vdc frame power feeders from the filter unit terminate on the rear of the fuse and alarm unit. The -48 Vdc power feeders are hard-wired through the fuse blocks to the terminal strips at the rear of the unit. Connectorized cables are used to connect the terminal strips to the ac power units and the digital service adapters. The alarm relays are connected to the NCP office scanner circuit, via the control panel unit.

H. Filter Unit

2.19 The filter unit, located in the base of the digital facility access frame (Fig. 1), contains two separate -48 Vdc filter capacitors. The two frame power feeders from the power distribution frame terminate on the filter capacitors. The frame power feeders are hard wired from the filter capacitors to the fuse and alarm unit.

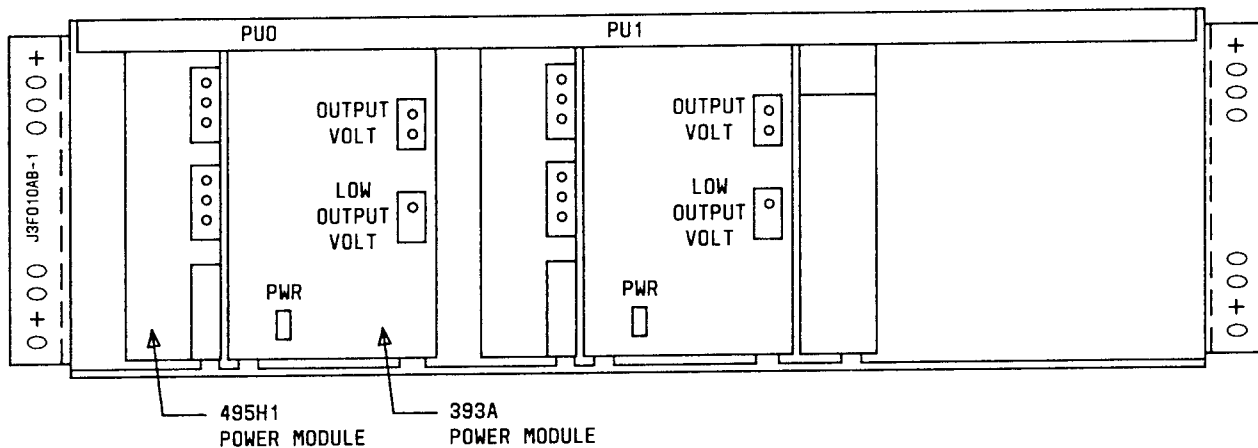


Fig. 8—AC Power Unit Mounting

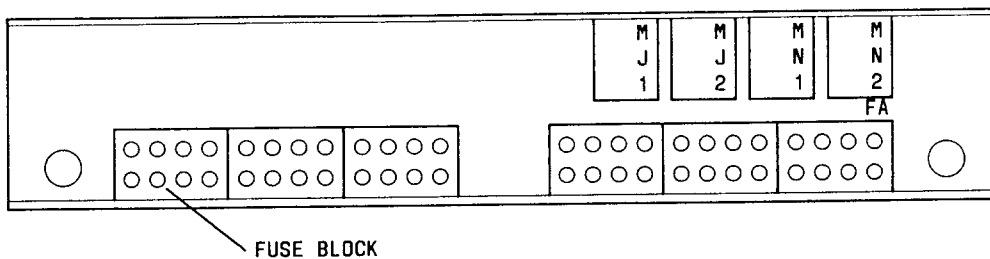


Fig. 9—Fuse and Alarm Unit

DIGITAL FACILITY ACCESS/ALARM CABINET (J3F010C)

2.20 The digital facility access/alarm cabinet (J3F010C), used in 1ANCPs equipped with the 3B20D model 3 computer and 1BNCPs, is shown in Fig. 10. A digital facility access/alarm cabinet is a 26-inch wide single bay, 30-inch deep, 6-foot high cabinet enclosure (ED-4C270-71,G4). It operates on —48 Vdc as provided by the power distribution cabinet. The digital facility access/alarm cabinet houses the following units:

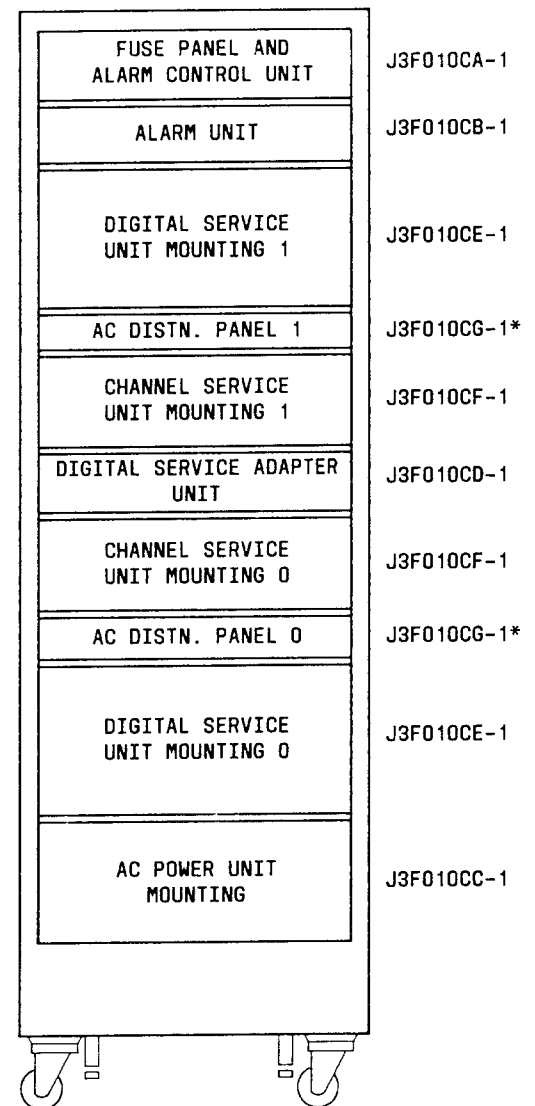
- (a) Fuse panel and alarm control unit
- (b) Alarm unit
- (c) Digital service unit mountings 0 and 1
- (d) AC distribution panel units 0 and 1
- (e) Channel service unit mountings 0 and 1
- (f) Digital service adapter unit
- (g) AC power unit mounting.

The digital facility access/alarm cabinet is also equipped with doors front and back, casters, and insulating, nylon-tipped, adjustable leveling feet.

A. Fuse Panel and Alarm Control Unit

2.21 The fuse panel and alarm control unit (Fig. 11) consists of the following:

- (a) A 624B4-type alarm cutoff key (ALARM CUTOFF)
- (b) A 624B4-type lamp test key (LAMP TEST)
- (c) An M1-type power alarm lamp mounted in a 624C4-type alarm reset key (ALARM RESET)
- (d) A 3B4- and 3C4-type jack for an office telephone (TEL)
- (e) 238AM-type jacks for one portable data terminal (TTY) and a spare (SPARE).
- (f) Two 30D and four 23A fuse blocks



* REAR MOUNTED

Fig. 10—Digital Facility Access/Alarm Cabinet (J3F010C)

- (g) Two AK4-type alarm relays (MJA mounted with MNA, and MJB mounted with MNB) (not shown in Fig. 11).
- (h) Terminal strips (CA-A, CA-B, and CA-C) located on the rear of the unit (not shown in Fig. 11).

The jack circuits are currently not used in an NCP office.

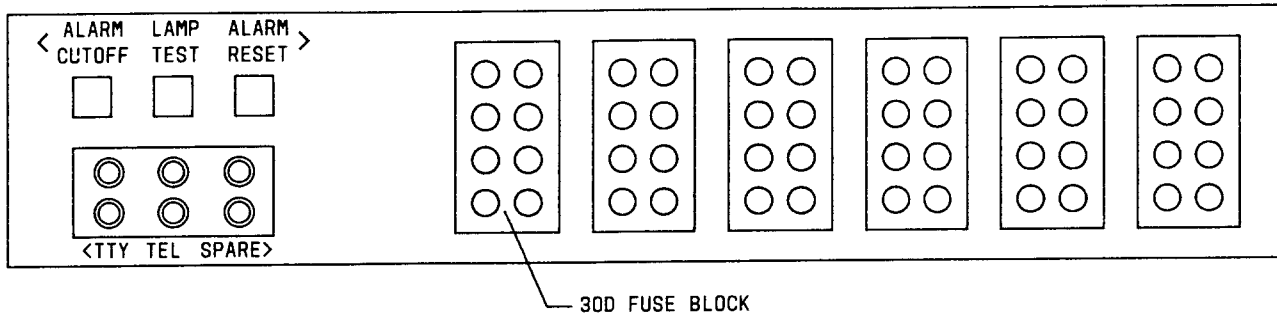


Fig. 11—Fuse Panel and Alarm Control Unit

2.22 The two frame power feeders (ED-5A079-30,G15) from the power distribution frame terminate on the rear of the fuse panel and alarm control unit. The -48 Vdc power feeders are hard-wired through the fuse blocks to the terminal strips CA-A and CA-B located on the rear of the unit. Cable assemblies (ED-3F004-30,G54) are used to connect the terminal strips to the digital service adapters. Cable assemblies (ED-3F004-30,G53) are used to connect the terminal strips to the ac power units.

B. Alarm Unit

2.23 The alarm unit (Fig. 12) consists of the following:

- (a) Five AJ5-type alarm relays (PMJ, PMN, BD, CRI, and RACO)
- (b) Two AJ63-type alarm relays (FLR and IR)
- (c) Four AK4-type alarm relays (MN0 mounted with MJ0, MN1 mounted with MJ1, MN2 mounted with MJ2, and MN3 mounted with MJ3)
- (d) 94E repeating coil (RC1)

- (e) 307N inductor (L1)
- (f) Tone generator A1365 circuit pack (TG)
- (g) Terminal strips (CB-A and CB-B) located on the rear of the unit (not shown in Fig. 12).

C. Digital Service Unit Mountings

2.24 The digital facility access/alarm cabinet is equipped with digital service unit mountings 0 and 1 as shown in Fig. 10. Each digital service unit mounting (Fig. 2) has positions to house a maximum of five DATAPHONE Z2556A DSUs (data service units). Currently, each digital service unit mounting in an NCP may house a maximum of only four DSUs and a minimum of one DSU. The Z2556A DSU replaces the 500B digital service unit and the 550A channel service unit. The 500B digital service unit and the 550A channel service unit were reclassified MD (manufacture discontinued). The digital service unit mounting 0 has positions to house data service units 01 through 05. Digital service unit mounting 1 has positions to house data service units 06 through 10. For a physical description of a Z2556A DSU, see paragraph 2.03 through 2.07.

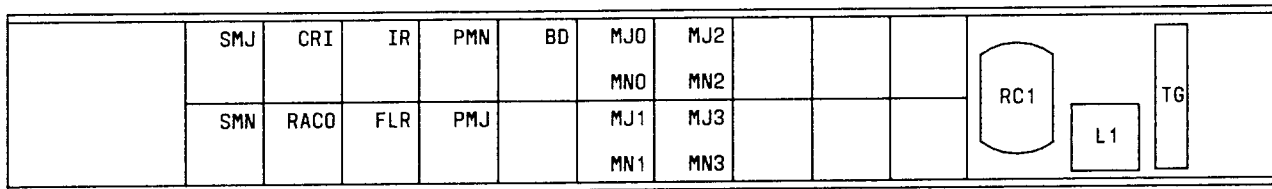


Fig. 12—Alarm Unit

D. AC Distribution Panel Units

2.25 The digital facility access/alarm cabinet is equipped with ac distribution panel units 0 and 1 as shown in Fig. 10. Each ac distribution panel unit is rear mounted and consists of five double ac receptacles (1G-5262) and one molex plug PBA on the rear panel. The ac distribution panel unit 0 contains double ac receptacles 1 through 5. The ac distribution panel unit 1 contains double ac receptacles 6 through 10.

2.26 The molex plug PBA is equipped with five terminals that are connected to the five double ac receptacles. The molex plug PBA is also connected externally by cable (ED-3F004-31,G51) to ac power unit PU1 and ac power unit PU0. On ac distribution panel unit 0, receptacles 1, 3, and 5 are connected to ac power unit PU0, and receptacles 2 and 4 are connected to ac power unit PU1. On ac distribution panel unit 1, receptacles 6, 8, and 10 are connected to ac power unit PU1, and receptacles 7 and 9 are connected to ac power unit PU0.

2.27 The rear panel of an ac distribution panel unit is similar to the rear panel of an ac distribution panel unit used on the digital facility access frame (Fig. 5) except for the connector plug stamping on the rear panel. The front panel is also not visible and does not contain any fuses.

E. Digital Service Adapter Unit

2.28 The digital service adapter unit consists of two 115C apparatus mountings arranged to house ten digital service adapters (DSA01 through DSA10) and the required backplane wiring. Currently, a digital service adapter unit in an NCP houses a maximum of only eight digital service adapters and a minimum of two. The digital service adapter unit is similar to the digital service adapter unit used on the digital facility access frame (Fig. 6) except for the digital service adapter number stampings on the front designation panel.

2.29 A digital service adapter (TF5 circuit pack) consists of component apparatus mounted on a plug-in circuit board assembly. A digital service adapter operates on -48 Vdc obtained from the fuse panel and alarm control unit and includes a power pack to convert the -48 Vdc to ± 5 Vdc required for the operation of the majority of the integrated circuits on the circuit pack.

2.30 The backplane assembly of a digital service adapter unit (ED-3F021-30) has ten connector fields. Each connector field is grouped into five ports for connectorized cabling. All input and output wiring to the backplane is made with connectorized cables. The following cable assemblies are used to connect a TF5 circuit pack to other units on the digital facility access/alarm cabinet:

- (1) Cable assembly ED-3F004-31,G22 connects port 1 to a Z2556A DSU (DATA TERMINAL connector)
- (2) Cable assembly ED-3F004-31,G17 connects port 2 to a link node
- (3) Cable assembly ED-3F004-31,G19 connects port 3 to a Z2556A DSU (NETWORK jack) via a line adapter
- (4) Cable assembly ED-3F004-31,G20 connects port 4 to the transmission facility connector field (P1) mounted on the rear of a channel service unit mounting
- (5) Cable assembly ED-3F004-31,G54 connects port 5 to the fuse panel and alarm control unit.

2.31 Each digital service adapter is connected via connectorized cabling to a Z2556A DSU. Digital service adapters 01 through 05 are connected to Z2556A DSUs in digital service unit mounting 0. Digital service adapters 06 through 10 are connected to Z2556A DSUs in digital service unit mounting 1.

F. AC Power Unit Mounting

2.32 The ac power unit mounting (Fig. 8) is a 132 apparatus mounting arranged to hold ac power units PU0 and PU1 and the required backplane wiring. Each ac power unit consists of a 495H1 and a 393A power module. The cabinet power feeders are hard wired from the fuse panel and alarm control unit to PU0 and PU1. The PU0 is connected to ac distribution panel units 0 and 1 (molex plug PBA), and PU1 is connected to ac distribution panel units 0 and 1 (molex plug PBA) via connectorized cabling (ED-3F004-31,G51).

3. FUNCTIONAL DESCRIPTION

3.01 The digital facility access circuits act as an interface between the link nodes of a ring node

frame/cabinet and the digital transmission facility. The link nodes terminate digital A-links at an NCP. Access from a link node to the digital transmission facility is provided by a *DATAPHONE* Z2556A DSU and a digital service adapter (TF5 circuit pack). The digital facility access frame and the digital facility access/alarm cabinet may provide digital facility access circuits for a maximum of ten 56-kbps digital A-links. Currently, an NCP provides a maximum of eight digital facility access circuits and a minimum of two.

A. DATAPHONE Z2556A Data Service Unit

3.02 Each Z2556A DSU on a digital facility access frame and digital facility access/alarm cabinet is associated with a digital service adapter to provide access from a link node to the digital transmission facility (Fig. 13). A Z2556A DSU contains customer interfaces and provides signal processing functions and test capabilities. A pair of transmit and receive leads connect a Z2556A DSU with the digital transmission facility via a digital service adapter. Data is exchanged in a modified bipolar format. A Z2556A DSU converts bipolar data signals from the digital transmission facility to data signals conforming to the CCITT (International Telegraph and Telephone Consultative Committee) specification V.35. A Z2556A DSU transmits V.35 clock and data signals and control signals conforming to EIA (Electronic Industries Association) standard RS-232C to a digital service adapter (TF5 circuit pack).

3.03 A Z2556A DSU also has self-test and loopback capabilities. The STATUS LED is a two color (red/green) indicator visible on the front panel when power is applied to the data service unit. A green LED indicates a normal condition, and a red LED indicates on out-of-service condition. The LCD test button on the front panel illuminates all the LCD segments in the LCD display. The TP (test pattern) switch is operated to activate a built-in test-pattern generator and comparator.

3.04 A Z2556A DSU is capable of performing an LL (local loopback), DL (digital loopback), and RL (remote loopback). An LL is a manually-initiated loopback where the transmit and receive leads (T,R,T1,R1) are looped back toward the link node. A DL is a manually-initiated loopback from the data terminal interface where the transmit and receive leads are looped back toward the digital transmission facility. An RL is manually-initiated and forces the far-end Z2556A data service unit into a digital loopback. The TP (test pattern) test may also be used in conjunction with the LL and RL.

B. AC Distribution Panel Units

3.05 The ac distribution panel units 0 and 1 on a digital facility access frame and digital facility access/alarm cabinet distribute 120 Vac to the data service units. The ac distribution panel unit 0 distributes 120 Vac through the ac receptacles to data service units in digital service unit mounting 0. The ac distribution panel unit 1 distributes 120 Vac

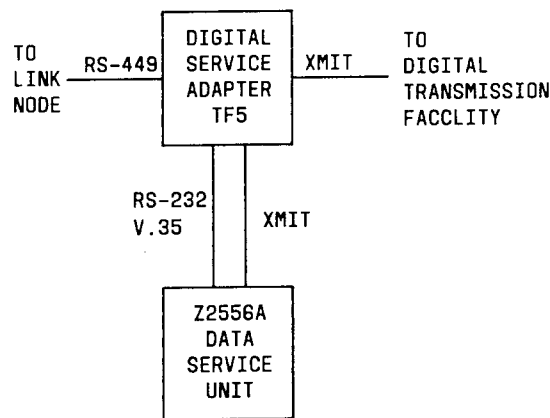


Fig. 13—Digital Facility Access Circuit Functional Diagram

through the ac receptacles to data service units in digital service unit mounting 1.

C. Digital Service Adapter

3.06 Each digital service adapter on a digital facility access frame and digital facility access/ alarm cabinet is associated with a Z2556A DSU to provide access from a link node to the digital transmission facility (Fig. 13). A digital service adapter provides signal level translation between the RS-449 interface presented by a link node and the V.35/RS-232C interface used by a Z2556A DSU.

3.07 A digital service adapter also provides an external loopback on the line side of a digital service adapter. The central processor initiates the loopback by operating relay K1 in a digital service adapter. The relay contacts bridge the transmission leads (T,R,T1,R1) in both the line direction and the local direction. When the relay is normal or in a nonoperated state, the transmission leads are cut through to the digital transmission facility.

3.08 A digital service adapter also has two ganged switches (S1A and S1B). These switches are used to set the data rate. For 56-kbps operation, the switch settings must be S1A ON and S1B OFF.

D. Control Panel Unit

3.09 The control panel unit on a digital facility access frame provides jacks for the following: two portable data terminals (TTY A A1 and TTY B B1); a spare (SPARE 1 and 2); an office telephone (TEL OFFICE); and a 660-type telephone circuit (TEL 660 PANEL). The jack circuitry is currently not used in an NCP office.

3.10 The alarm cutoff (ALARM CUTOFF) key, lamp test (LAMP TEST) key, and the power alarm reset (PWR ALM RESET) key which contains the power alarm (PWR ALM) lamp are associated with the power and alarm circuitry.

- (a) The ALARM CUTOFF key closes the scan circuit requesting the central processor to cut off the present audible alarm. Subsequent alarms are not inhibited by this action.
- (b) The LAMP TEST key activates the fuse alarm (FA) lamp on the fuse and alarm unit and the PWR ALM lamp.

(c) The PWR ALM RESET key is used to release all activated alarm relays placing them in a normal condition after all power trouble has been cleared.

(d) The PWR ALM lamp visually indicates a power alarm on the digital facility access frame.

E. AC Power Units

3.11 The ac power unit mounting on a digital facility access frame and the digital facility access/ alarm cabinet house ac power units PU0 and PU1. The ac power units PU0 and PU1 supply 120 Vac required to power the data service units. Each ac power unit consists of a 393A and a 495H1 power module.

3.12 The ac power unit PU0 and PU1 convert —48 Vdc obtained from power feeders A and B to 120 Vac. The 120 Vac is supplied to data service units through receptacles in the ac power distribution panel units. The ac power unit PU0 powers the odd-numbered data service units, and ac power unit PU1 powers the even-numbered data service units.

F. Fuse and Alarm Unit

3.13 The fuse and alarm unit on a digital facility access frame distributes —48 Vdc from the filter unit to ac power unit PU0, ac power unit PU1, and the digital service adapters. The fuse and alarm unit also contains alarm relays and monitors power on the digital facility access frame.

3.14 Fuse blocks distribute —48 Vdc to each ac power unit and digital service adapter. Fuses are provided for each ac power unit and digital service adapter. The remaining fuses are used for alarm relays and lamps.

3.15 All fuse and ac power unit alarms are collected at the fuse and alarm unit. The two categories of alarms are major and minor. The major and minor alarms are activated by alarm relay contact closures. The following conditions activate a major alarm.

- (a) A low voltage condition in an ac power unit.
- (b) Failure of a fuse on a 120 Vac line serving a data service unit.

- (c) Failure of a fuse serving an ac power unit or digital service adapter.

All other fuse failures result in a minor alarm.

3.16 A low voltage condition in an ac power unit or a fuse failure on a 120 Vac line serving a data service unit activates alarm relay MJ2. Alarm relay MJ2 signals the central processor of a major alarm via a scan point indication, signals the office alarm frame, and lights the power alarm (PWR ALM) lamp on the control panel unit.

3.17 Failure of a fuse serving an ac power unit or a digital service adapter activates alarm relay MJ1. Alarm relay MJ1 lights the fuse alarm (FA) lamp on the fuse and alarm unit and activates alarm relay MJ2. Alarm relay MJ1 and MJ2 signal the central processor of a major alarm via scan point indications and signal the office alarm frame. Alarm relay MJ2 also lights the PWR ALM lamp on the control panel unit.

3.18 Failure of a fuse serving an alarm relay or PWR ALM lamp, or failure of the PWR ALM lamp itself activates alarm relay MN1. Alarm relay MN1 lights the FA lamp on the fuse panel unit and activates alarm relay MN2. Alarm relay MN1 and MN2 signal the central processor of a minor alarm via scan point indications and signal the office alarm frame. Alarm relay MN2 also lights the PWR ALM lamp on the control panel unit.

G. Filter Unit

3.19 The filter unit on a digital facility access frame consists of two -48 Vdc filter capacitors used for decoupling power surges and to provide energy storage for clearing fuses when they blow. The two frame power feeders terminate on the capacitors.

H. Fuse Panel and Alarm Control Unit

3.20 The fuse panel and alarm control unit on a digital facility access/alarm cabinet provides various communications, control, power distribution, and alarm functions. The fuse panel and alarm control unit provides jacks for a portable data terminal (TTY), an office telephone (TEL), and a spare (SPARE). The jack circuitry is currently not used in an NCP office.

3.21 The alarm cutoff (ALARM CUTOFF) key, lamp test (LAMP TEST) key, and alarm reset (ALARM RESET) key which contains the power alarm lamp are associated with the power and alarm circuitry.

- (a) The ALARM CUTOFF key closes the scan circuit requesting the central processor to cut off the present audible alarm. Subsequent alarms are not inhibited by this action.
- (b) The LAMP TEST key activates the power alarm lamp on the fuse panel and alarm control unit.
- (c) The ALARM RESET key is used to release activated alarm relays after all power trouble has been cleared.
- (d) The power alarm lamp visually indicates a power alarm on the digital facility access/alarm cabinet.

3.22 The fuse panel and alarm control unit distributes -48 Vdc to the ac power units and the digital service adapters. A maximum of six fuse blocks distributes -48 Vdc to ac power unit PU0, ac power unit PU1, and the digital service adapters (01 through 10). Fuses are provided for each ac power unit and digital service adapter. The remaining fuses are used for alarm relays and lamps.

3.23 The fuse panel and alarm control unit also contains alarm relays and monitors power on the digital facility access/alarm cabinet. All fuse and ac power unit alarms are collected at the fuse panel and alarm control unit. The two categories of alarms are major and minor. The major and minor alarms are activated by alarm relay contact closures. The following conditions activate a major alarm.

- (a) A low voltage condition in an ac power unit
- (b) Failure of a fuse serving an ac power unit or digital service adapter.

All other fuse failures result in a minor alarm.

3.24 A low voltage condition in an ac power unit activates alarm relay MJB. Alarm relay MJB signals the central processor of a major alarm via a scan point indication, signals the alarm unit, and lights the power alarm lamp.

3.25 Failure of a fuse serving an ac power unit or digital service adapter activates alarm relay MJA. Alarm relay MJA activates alarm relay MJB. Alarm relay MJA and MJB signal the central processor of a major alarm via scan point indications and signal the alarm unit. Alarm relay MJB also lights the power alarm lamp.

3.26 Failure of a fuse serving an alarm relay or a lamp activates alarm relay MNA. Alarm relay MNA activates alarm relay MNB. Alarm relay MNA and MNB signal the central processor of a minor alarm via scan point indications and signal the alarm unit. Alarm relay MNB also lights the power alarm lamp.

I. Alarm Unit

3.27 The alarm unit on a digital facility access/ alarm cabinet collects all NCP office alarms and provides the corresponding audible and visual status indications. Alarm signals from NCP equipment activate alarm relays on the alarm unit. The contact closures of the alarm relays provide the matching audible and visual alarm indications. The alarm unit also has the ability to remote alarm indications. There are three types of office alarms collected at the alarm unit.

- (1) System alarms
- (2) Power plant alarms
- (3) Aisle alarms.

System Alarms

3.28 System alarms are generated by the 3B20D computer. They may originate in the 3B20D computer itself or be generated in response to scan point indications coming from NCP equipment. There are three system alarms.

- (1) Critical alarm
- (2) System major alarm
- (3) System minor alarm.

3.29 A critical alarm signal activates alarm relay CRI. Alarm relay CRI triggers the tone generator to sound the critical alarm via relay IR. Alarm relay CRI also lights the red MJ lamp on the main

aisle pilot panel and activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel. The exit pilot lamps indicate floor alarms.

3.30 A system major alarm signal activates alarm relay SMJ. Alarm relay SMJ triggers the tone generator to sound the system major alarm via relay IR. Alarm relay SMJ also lights the red MJ lamp on the main aisle pilot panel and activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

3.31 A system minor alarm signal activates alarm relay SMN. Alarm relay SMN causes the minor alarm to sound, lights the yellow MN lamp on the main aisle pilot panel, and activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

Power Plant Alarms

3.32 Power plant alarms are generated by the power plant as a result of alarm conditions and sent to the alarm unit. There are three types of power plant alarms.

- (1) Power plant major alarm
- (2) Power plant minor alarm
- (3) Battery discharge alarm.

3.33 A power plant major alarm signal activates alarm relay PMJ. Alarm relay PMJ causes the power plant major alarm to sound and lights the red PWR lamp on the exit pilot panel. If the power plant is on the same floor as the NCP, alarm relay PMJ also activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

3.34 A power plant minor alarm signal activates alarm relay PMN. Alarm relay PMN causes the minor alarm to sound and lights the red PWR lamp on the exit pilot panel. If the power plant is on the same floor as the NCP, alarm relay PMN also activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

3.35 A battery discharge alarm signal activates alarm relay BD. Alarm relay BD causes the power plant major alarm to sound and lights the red PWR lamp on the exit pilot panel. If the power plant is on the same floor as the NCP, alarm relay BD also

activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

Aisle Alarms

3.36 The NCP equipment cabinets are capable of generating major and minor hardware alarms. These are multiplied on an aisle basis and terminated at the alarm unit.

3.37 A major alarm signal activates the appropriate alarm relay (MJ0 through MJ3) representing that aisle. The appropriate alarm relay (MJ0 through MJ3) lights the red MJ lamp on the aisle pilot panel and the red MJ lamp on the main aisle pilot panel. The appropriate alarm relay also activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

3.38 A minor alarm signal activates the appropriate alarm relay (MN0 through MN3) representing that aisle. The appropriate alarm relay (MN0 through MN3) lights the yellow MN lamp on the aisle pilot panel and the yellow MN lamp on the main aisle pilot panel. The appropriate alarm relay also activates relay FLR. Relay FLR lights an amber exit pilot lamp on the exit pilot panel.

Remote Alarms

3.39 All NCP system and power plant alarms may be remotod to a remote work center. The remote alarm condition may be cut off via a signal generated by the 3B20D computer. The remote alarm cutoff signal activates relay RACO. Relay RACO breaks the remote system alarm circuits and the remote power plant alarm circuits. Relay RACO also lights the yellow OTH lamp on the main aisle pilot panel and signals the remote work center.

4. GLOSSARY

4.01 The following list of acronyms and abbreviations are the most commonly used when referring to the digital facility access frame and the digital facility access/alarm cabinet.

A-link	access signaling link
BD	battery discharge alarm
CCS	common channel signaling

CNI	common network interface
CRI	critical alarm
CCITT	International Telegraph and Telephone Consultative Committee
DFA	digital facility access
DL	digital loopback
DSA	digital service adaptor
EIA	Electronic Industries Association
FA	fuse alarm
IMS	interprocess message switch
kbps	kilobits per second
LCD	liquid-crystal display
LED	light-emitting diode
LL	local loopback
MJ	major alarm
MD	manufacture discontinued
MN	minor alarm
NCP	network control point
PA	power alarm
PU	power unit
PWR	power
RACO	remote alarm cutoff
RL	remote loopback
TP	test pattern
TST	test
1ANCP	No. 1A network control point
1BNCP	No. 1B network control point