

GDC 010R313-000
Issue 4, May 1997

Instruction Manual

Universal System Shelf

AC and DC-to-DC Models

Warning

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to CISPR-22 of FCC and international rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference. The user is cautioned that any changes or modifications not expressly approved by General DataComm void the user's authority to operate the equipment.

This digital apparatus does not exceed Class A limits for radio noise emissions from digital apparatus described in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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Publication Update Bulletin for

Universal System Shelf Instruction Manual Publication 010R313-000, Issue 4

Overview

This publication reflects changes to the Instruction Manual for Universal System Shelf.

System Description, Chapter 1 - Page1-13 Add the following item to the USS-2-DC Equipment List:

Table 1-2 USS-2-DC Equipment List

Item	GDC P/N
USS-2-DC/R Universal System Shelf Assembly Redundant with 4 DC-3N/BP's	010M080-004



Errata Sheet for Instruction for Universal System Shelf Publication 010R313-000, Issue 4

Overview

This publication reflects changes to the Universal System Shelf Instruction manual.

Preface - Replace or add Canadian Warning, and add new service and support information:

Industry Canada Notification

The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operation and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Notice: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Electromagnetic Compatibility

This Class A digital apparatus complies with Canadian ICES-003.

Avis D'industrie Canada

L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être in-

stallé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avvertissement: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

Avis: L'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

La Compatibilité d'Électro-magnétique

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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VITAL Network Services, a General DataComm company, is committed to providing the service support and training needed to install, manage, and maintain your GDC equipment. GDC's VITAL Network Services provides hands-on training courses through **VITAL Network Services Global Technology Training Services**. Courses range from basic data communications, modems and multiplexers, to complex network and ATM systems. Training courses are available at our centers in the US, UK, France, Singapore and Mexico, as well as at a customer's site.

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VITAL Network Services World Headquarters

6 Rubber Avenue
Naugatuck, Connecticut 06770 USA

North America: 1 800 243 1030
1 888 248 4825
1 203 729 2461
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French Speaking Canada: 1 800 361 2552
North America Tax: 1 203 723 5012
1 203 729 7611

VITAL Network Services Regional Sales and Service Offices:

Europe, Middle East, Africa

VITAL Network Services
Molly Millars Close
Molly Millars Lane
Wokingham, Berkshire RG41 2QF UK

Telephone: +44 1189 657200
Training: +44 1189 657240
Fax: +44 1189 657279

Central America, Latin America

VITAL Network Services
Periferico Sur 4225, Desp. 306
C.P. 14210, Mexico D.F., Mexico

Telephone: +52 5 645 2238
Training: +52 5 645 2238
Fax: +52 5 645 5976

Asia Pacific

VITAL Network Services
501 Orchard Road 05-05
Wheelock Place, Singapore 238880

Telephone: +65 735 2123
Training: +65 735 2123
Fax: +65 735 6889

International Calling Code (+)

When calling from outside the country of origin, use the appropriate International Calling Code where the + symbol is shown.

July 1998

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Antistatic Precautions

Electrostatic discharge (ESD) results from the buildup of static electricity and can cause computer components to fail. Electrostatic discharge occurs when a person whose body contains a static buildup touches a computer component.

The equipment may contain static-sensitive devices that are easily damaged and proper handling and grounding is essential. Use ESD precautionary measures when installing parts or cards and keep the parts and cards in antistatic packaging when not in use. If possible, use antistatic floorpads and workbench pads.

When handling components, or when setting switch options, always use an antistatic wrist strap connected to a grounded equipment frame or chassis. *If a wrist strap is not available, periodically touch an unpainted metal surface on the equipment.* Never use a conductive tool, like a screwdriver or a paper clip, to set switches.

Safety Guidelines

The following symbols are used when unsafe conditions exist or when potentially hazardous voltages are present:



Caution statements identify conditions or practices that can cause damage to the equipment or loss of data



Warning statements identify conditions or practices that can result in personal injury or loss of life.

Always use caution and common sense. *To reduce the risk of electrical shock, do not operate equipment with the cover removed.* Repairs must be performed by qualified service personnel only.

- Never install telephone jacks in a wet location unless the jack is designed for that location.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing telephone lines and never install telephone wiring during an electrical storm.

FCC Part 68 Compliance

Connection of data communications equipment to the public telephone network is regulated by FCC Rules and Regulations. This equipment complies with Part 68 of these regulations which require all of the following.

All connections to the telephone network must be made using standard plugs and telephone company provided jacks or equivalent. Connection of this equipment to party lines and coin telephones is prohibited. A label on the back of the front panel of data communications equipment and on the underside or rear panel of other equipment provides the FCC Registration number and the Ringer Equivalence Number (REN) for the unit. If requested, give this information to the telephone company.

If the unit causes harm to the telephone network, the telephone company may discontinue your service temporarily and if possible,

you will be notified in advance. If advance notice is not practical, you will be notified as soon as possible and will be advised of your right to file a complaint with the FCC. The telephone company may change its communication facilities, equipment, operations and procedures where reasonably required for operation. If so, the telephone company will notify you in writing. You must notify the telephone company before disconnecting equipment from 1.544 Mbps digital service. All repairs or modifications to the equipment must be performed by General DataComm. Any other repair or modification by a user voids the FCC registration and the warranty.

Canada DOC Notification

The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operation and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

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Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Deutschland

Installations Anweisungen: Installieren Sie die Telefonleitungen nicht während eines Gewitters. Installieren Sie die Telefonleitungen nicht in einem feuchten Raum, außer die Dose entspricht den Vorschriften für Feuchträume. Berühren Sie unisolierte Telefonleitungen oder Einrichtungen nicht, außer diese sind vom Telefonnetz getrennt. Vorsicht bei der Installierung oder Änderung von Telefonleitungen.

Achtung: Es gibt keine durch den Benutzer zu wartende Teile im Gerät. Wartung darf nur durch qualifiziertes Personal erfolgen.

Registration Status	Port ID	SOC	FIC	USOC

Preface

Scope

This manual describes how to install and configure an AC or DC shelf and explains how to monitor and manage network devices. This documentation is written for operators and installers, and assumes a working knowledge of data communications equipment.

Organization

This manual has four chapters. The information is arranged as follows:

- *Chapter 1 -System Description* provides an overview to the Universal System Shelf (USS), AC (USS-1-AC) and DC-to-DC (USS-2-DC) Models. It includes a general description, and equipment, assembly, and cabling information on the USS-1-AC and USS-2-DC shelves.
- *Chapter 2 - Installation* details steps for installing the USS-1-AC and USS-2-DC Shelves.
- *Chapter 3 - Operation* describes USS-2-DC controls.
- *Chapter 4 - Maintenance* deals with replacing fuses for unit shelves.

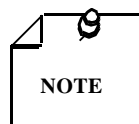
The *Index* contains topics on the shelves with page numbers.

Document Conventions

Level 1 paragraph headers introduce major topics.

Level 2 paragraph headers introduce subsections of major topics.

Level 3 paragraph headers introduce subsections of secondary topics.



Notes present special instructions, helpful hints or general rules.



Caution statements identify conditions or practices that can result in damage to the equipment or in loss of data.



Warning statements identify conditions or practices that can result in personal injury or loss of life.

Publications Part Numbers

GDC publication numbers (e.g., *GDC 10R313-000*) are used to track and order technical manuals. Publication numbers use the following format:

GDC NNNRnnn-000 or GDC NNNRnnn-Vnnn

NNN	identifies the product family (e.g., UAS)
R	denotes a technical publication
nnn	a number assigned by Technical Publications
000	identifies a hardware product and does not change
Vnnn	designates software version associated with a product, which may be updated periodically

The issue number on the title page changes only when a hardware manual is revised or when a manual is reprinted for some other reason; it does not automatically change when the software is updated. A new Software Version is always Issue 1. Other specialized publications such as Release Notes or Addenda may be available depending on the product.

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General DataComm is committed to providing the service and support needed to install, manage, and maintain your equipment. For information about service programs or for assistance with your support requirements, contact your local Sales Representative or call General DataComm Service at the 24-hour toll free number listed below.

- in the U.S. dial 1-800-243-1030
- outside the U.S. dial 1-203-598-7526

Be ready with the site name and phone number, and a description of the problem. The next available support representative will promptly return your call.

Hands-on training courses are provided by GDC Educational Services. Courses range from basic data communications, modems and multiplexers, to complex network and ATM systems and are taught in Connecticut or at a customer location. To discuss educational services or receive a course schedule, call 1-800-242-1030 and follow the menu instructions.

Glossary of Terms

Brownout Protection

Protection of the supply and external loads from an excessive reduction in input voltage.

Current Limiting

A current overload protection mechanism that limits the maximum output current to a preset value for conditions of load resistance or short circuit.

Dropout Voltage

The decreased input voltage at which the power supply (or regulator) ceases to regulate the output for further decreases in input voltage.

Ground

An electrical connection or common conductor that, at some point, connects to the earth.

Line Regulation

Refers to the maximum change in output voltage (or current) resulting from changes in load resistance (load), normally specified from no load to full load.

Load Regulation

Refers to the maximum change in output voltage (or current) resulting from changes in load resistance (load), normally specified from no load to full load.

Overvoltage Protection

Protection of the supply and externally connected loads against excessive output voltage, either from internal or external causes.

Redundancy

The employment of several devices, each performing the same function, in order to improve the reliability of a particular function.

Regulated Power Supply

A unit that maintains a constant output voltage or current for changes in line voltage, output load, ambient temperature, or time.

RS-232-C (EIA-232-D)

An EIA-specified physical interface, with associated electrical signaling, between data circuit-terminating equipment (DCE) and data terminal equipment (DTE); the most commonly employed interface between computers and modems.

Share Function

The share function forces two power supply modules to share equally in supplying the load.

Short Circuit Protection

Any automatic current limiting that enables the supply to continue operating, without any damage, when a short circuit is applied across the output terminals.

Station Battery

A separate battery power source within a facility that provides all DC input power requirements associated with the facility. Such a capability is often centrally located.

1 System Description

Features and Description of the AC/DC Universal System Shelves

- High density modular design . . . organizes and enhances valuable computer room space by housing up to 16 cards in each shelf
- Versatile backplanes . . . accommodates a wide mix of GDC systems products while simplifying installation and field upgrades
- Operates in a wide range of domestic and international applications

Both the AC Universal System Shelf (USS-1-AC) and the DC Universal System Shelf (USS-2-DC) are new generations of GDC 10.5-inch (267 mm), 19-inch (482 mm) rack-mountable, and 13.5-inch (343 mm) metal shelf assemblies which accommodate a variety of GDC data communications products. All products in the DataComm product family use a standard pc card size and have standardized edge connectors which, depending on the device, carry the signals required by the business machine and telephone line interfaces, power, and so on. These products can be used interchangeably in DataComm Standalone Enclosures as well as in the USS shelves.

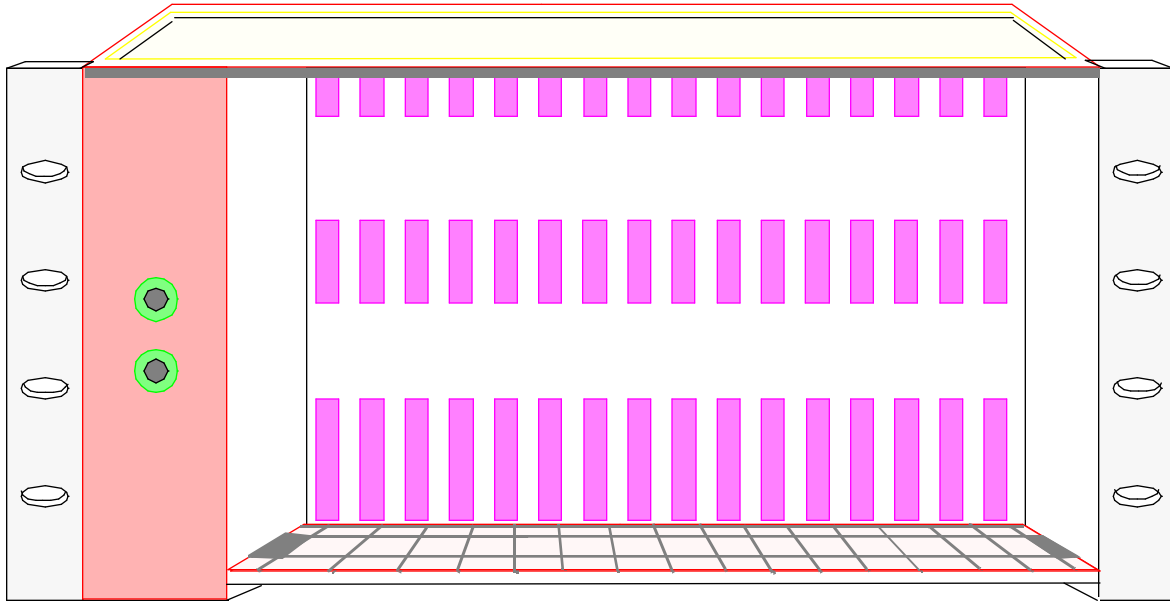
Whether domestic or international, both shelves use harness cards and backplanes configured to occupy two, four, or six slots in the shelf; the USS-2-DC shelf, domestic or international, can handle either redundant or non-redundant power supplies. The backplanes are easy to install from the rear of the shelf, where the interface and power connections are readily accessible.

Each product ordered for either the USS-1-AC or USS-2-DC shelf is made up of necessary plug-in cards, back panel assembly, product label, affixed to the front of the shelf at the slots (or section) where the product is installed, all installation hardware, and the blank front and rear panels to fill spaces not occupied by the product. Shelf assemblies hold 16 GDC DataComm plug-in cards. Multiple card products obviously occupy multiple slots in the USS-1-AC and USS-2-DC shelves.

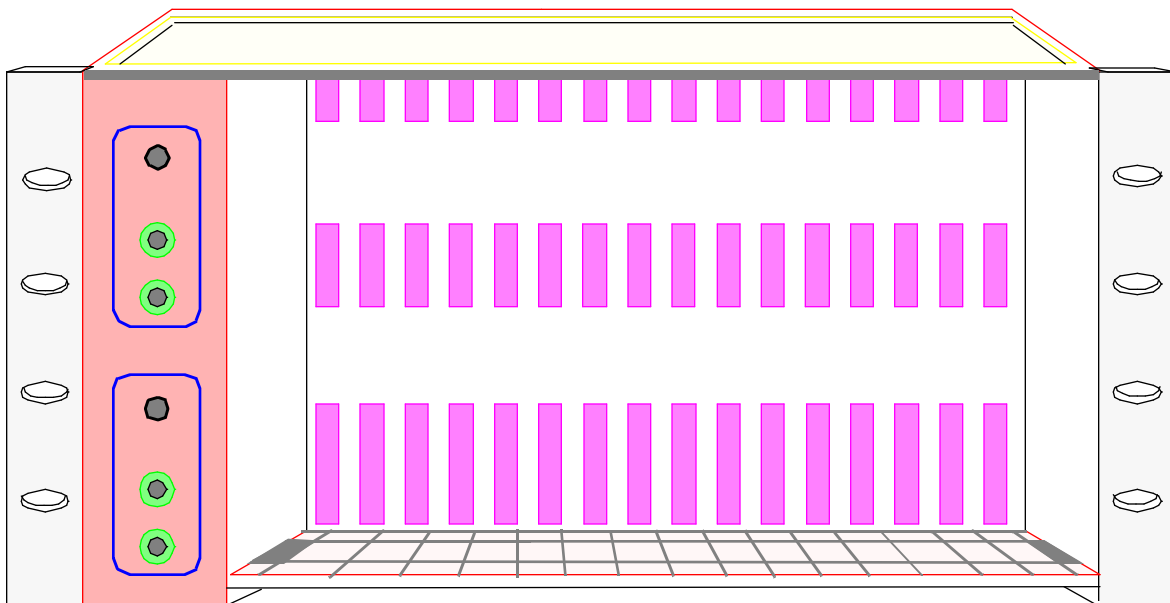
USS-1-AC Shelf

Located on the front left hand side of the shelf separated from the pc card compartments by a steel partition, the power supply compartment for the domestic (*Figure 1-1, A*) and international USS-1-AC (*Figure 1-1, B*) versions holds four transformers, each capable of distributing power to four adjacent shelf slots and sometimes referred to as quadrants.

The power supply compartments house four transformers mounted to the end plate. The power supply front panel mounts two LED indicators and fuses. *Table 4-1, Maintenance, Chapter 4*, lists the fuses for USS-1-AC shelves. Secondary wiring of the transformers, which passes through an opening in the shelf backplane, consists of a main cable harness which branches out into eight separate harnesses and supplies power to eight plug-in connectors. Connectors are mounted along the top edge of the shelf.



A. Domestic, USS-1-AC



B. International, USS-1-AC

Figure 1-1 GDC USS-1-AC Universal System Shelf

USS-1-AC Shelf Equipment

Equipment list for the USS-1 Universal System Shelf, with part numbers and equipment available for the USS-1-AC are displayed in *Table 1-1, below*.

Table 1-1 USS-1-AC Equipment List

Item	GDC Part No.
GDC USS-1 Universal System Shelf	
USS-1-D 117 V ac, Domestic	010B080-001
USS-1-E 220 V ac, International	010B080-002
USS-1-J 100 V ac, International	010B080-003
USS-1-U 240 V ac, International	010B080-004
19 to 23-inch Adapter Ears (optional, 2 required)	010D360-001
Blank Rear Panel (2 slot)	010D401-001
Blank Rear Panel (4 slot)	010D402-001
Center of Gravity Brackets, (19"-midmount)	010J011-001
Center of Gravity Brackets, (23"-midmount)	010J011-002
Center of Gravity Brackets, (26"-midmount)	010J015-003
Available Backplane Assemblies/Rackmount Kits*	
DC-1/BP (DataComm modems, domestic)	010B081-001
DC-2/BP (DataComm modems, international)	010B081-002
KILOMUX 1281/BP (KILOMUX 1281, domestic)**	081M002-001
KILOMUX 1281/BP (KILOMUX 2181, international)**	081M002-002
GEN*NET 1261/BP (GEN*NET 1261)**	065M010-001
MAU-1A/BP**) (modem/port sharing)	044M011-001
MAU-3/BP**)	044M013-001
MP-4/BP, Metrolex	010B223-001
PMC/BP	048B015-002
INIC/BP	058B032-001
DC-3N/BP, NEBS	010B187-001
ENMACS - 2N/BP, NEBS	048B018-001
*Each backplane assembly consists of the rear panel, harness card, hardware, and labels; the rackmount kit adds the plug-in card.	
**These backplanes have plug-in cards.	
Note: Refer to the appropriate GDC manual for the part numbers of the individual plug-in cards, strap options, operating procedures.	

Technical characteristics for the USS-1-AC Universal System Shelf are found in *Chapter 2, Installation, Table 2-1*.

USS-1-AC Backplane Options

All backplane configurations are unique depending on the specific product to be housed in the USS-1-AC. Most consist of a glass epoxy harness card mounted on a metal panel (MAU-1A/BP and MAU-3BP are just slotted metal panels). The metal panel mounts the required output connectors, and the harness card mounts the signal interface connectors. A short cable harness mates to the associated power connector (1 of 8) mounted along the top rear edge of the shelf.

Backplane assemblies are keyed by a tab located at the bottom of the metal panels. This tab mates with a slot which is part of the shelf and prevents the backplanes from being inserted incorrectly in the shelf.

Here are descriptions of the presently available USS-1-AC backplane options. *Figure 1-2, Sheets 1 through 4*, illustrates each backplane.

Modem Backplane (DC-1/BP)

This is a domestic backplane which accepts all GDC DataComm modem sets. It occupies four slots (one quadrant) in the USS-1 shelf and mounts the following connectors (*Figure 1-2, Sheet 1*):

- 4 EIA/TIA-232-E female business machine connectors
- 4 EIA/TIA-232-E male telephone set/line connectors
- 4 six-position switched network/private line terminal strips (located under the plastic cover)
- 4 eight-position keyed modular line jacks for switched network that may be used instead of the terminal strips

Modem Backplane (DC-2/BP)

Same as the DC-1/BP, except that it is used for international GDC modems, it mounts the following connectors (*Figure 1-2, Sheet 1*):

- 4 CCITT V.24 female business machine connectors
- 4 CCITT V.24 male telephone set/line connectors
- 4 six-position switched network/private line terminal strips

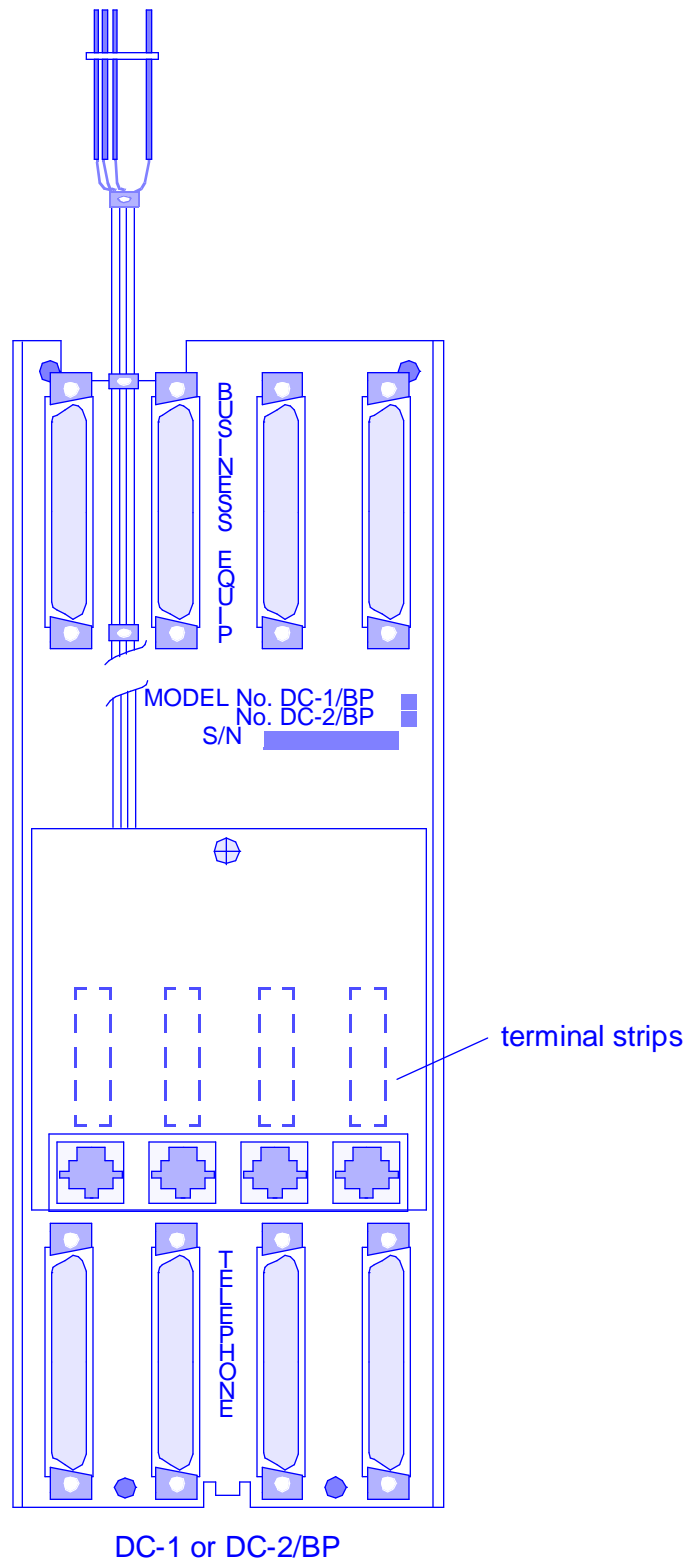


Figure 1-2 USS-1-AC Backplane Assemblies (Sheet 1 of 4)

KILOMUX Backplane (KILOMUX 1281/BP)

This backplane occupies six slots in the shelf and provides up to 16 channels with or without a modem. The connectors on the backplane are (*Figure 1-2, Sheet 2*):

- 19 EIA/TIA-232-E female connectors: sixteen channel connectors, one aggregate connector, one business connector, and one supervisory port
- 1 eight-position keyed modular line jack connector
- 1 six-position switched network/private line terminal strip

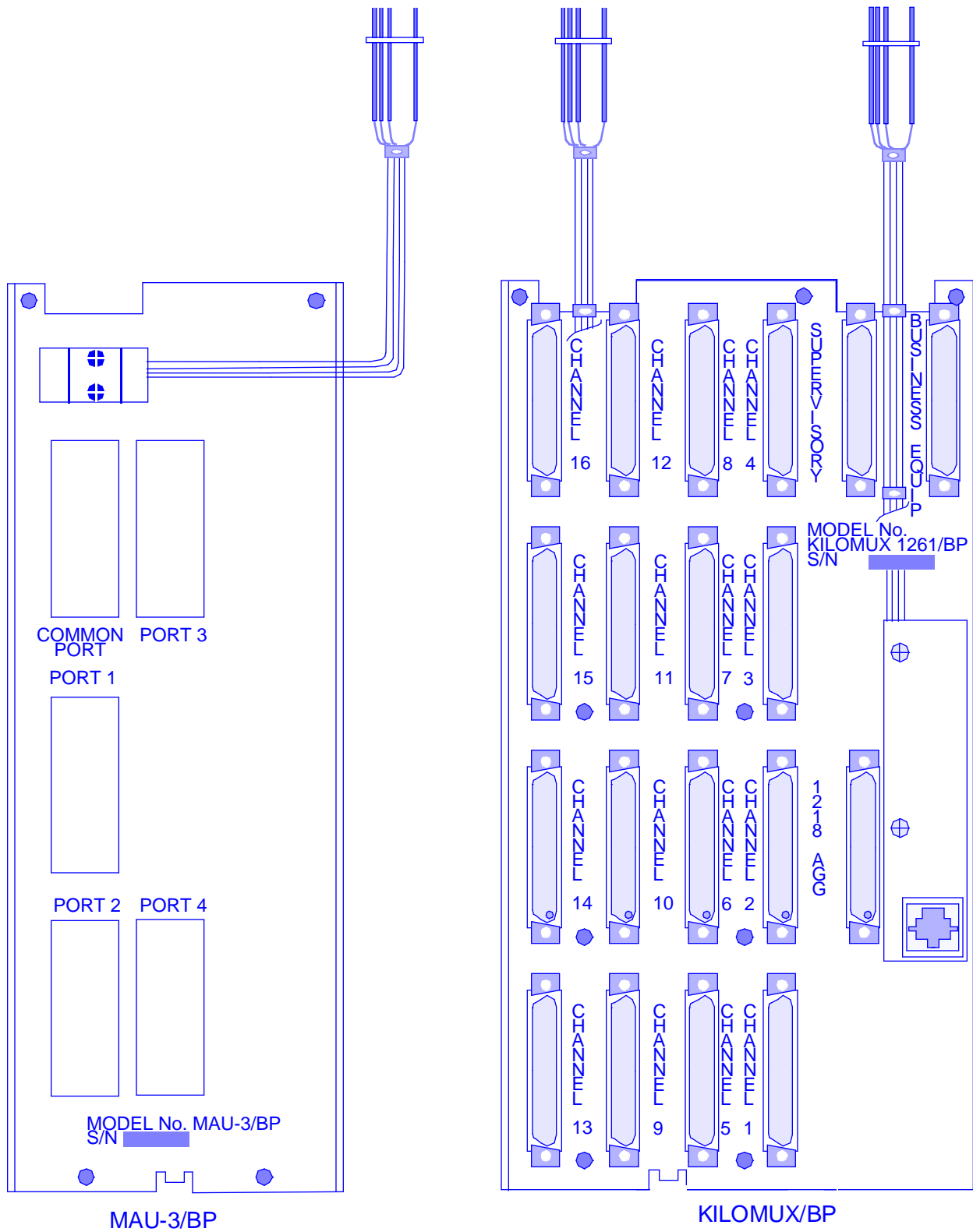


Figure 1-2 USS-1-AC Backplane Assemblies (Sheet 2 of 4)

GEN*NET Backplane (GEN*NET 1261/BP)

This four-slot backplane provides up to eight channels with or without a modem. It mounts the following connectors (*Figure 1-2, Sheet 3*):

- 10 EIA/TIA-232-E female connectors: eight channel connectors, one aggregate, and one business equipment connector
- 1 eight-position keyed modular line jack
- 1 EIA/TIA-232-E make auxiliary connector

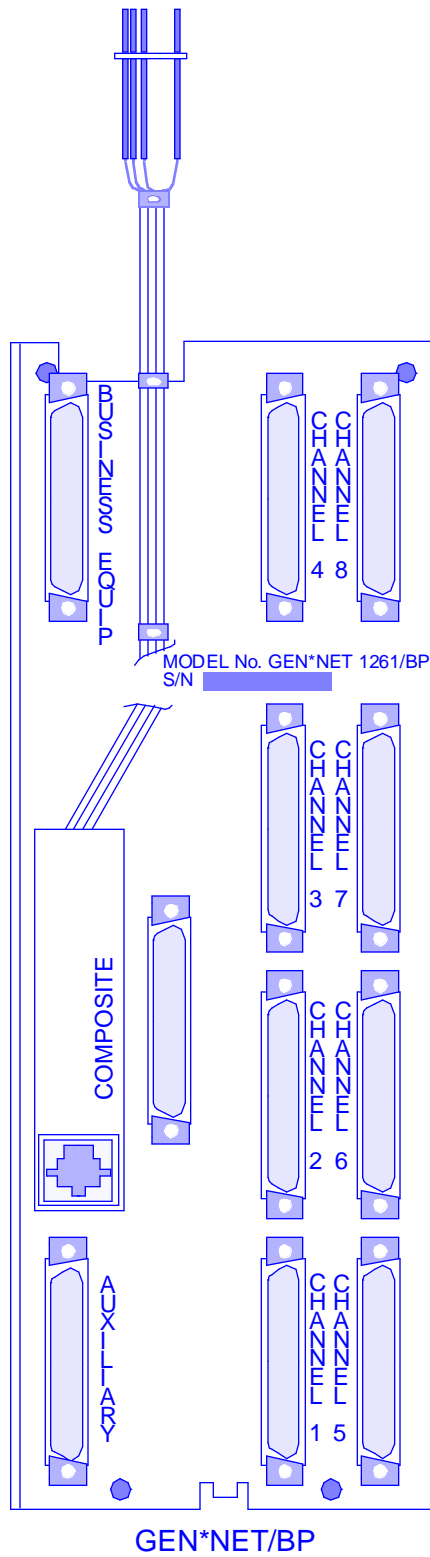


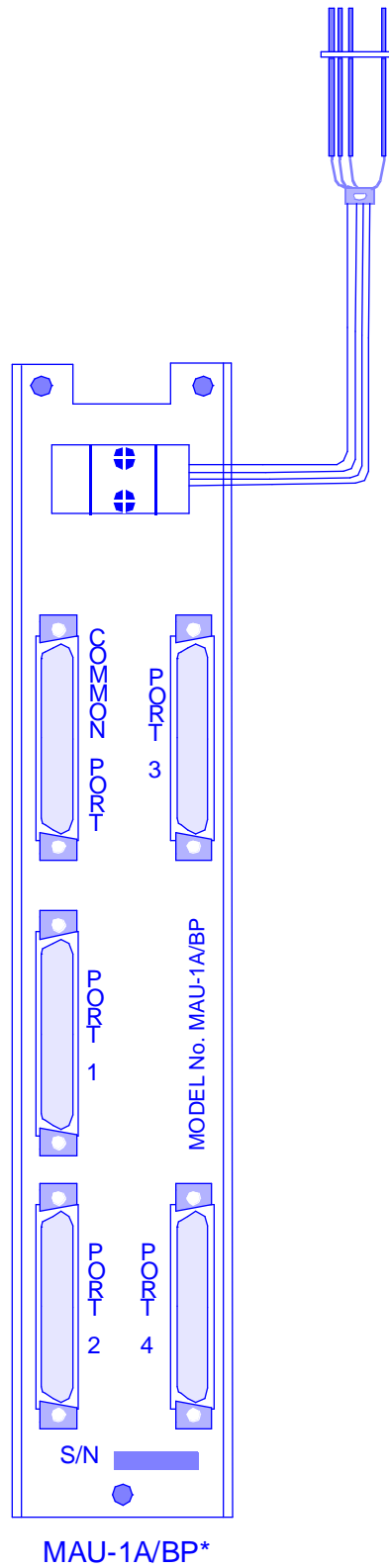
Figure 1-2 USS-1-AC Backplane Assemblies (Sheet 3 of 4)

Modem Access Unit Backplanes (MAU-1A/3/BP)

These backplanes accommodate a modem/port sharing unit. The MAU-1A/BP uses two slots and has 5 EIA/TIA-232-E female connectors.

The MAU-3/BP uses four slots and has 5 CCITT V.35 female connectors. Four of the five connectors are the ports, and one is used as the port common (*See Figure 1-2, Sheet 4 for 1A/BP and Sheet 2 for 3/BP*).

For cabling used in UK installations, *see Figure 1-3, following Sheet 4 of Figure 1-2*.



See Figure 1-3 for cable used in UK installations.

Figure 1-2 USS-1-AC Backplane Assemblies (Sheet 4 of 4)

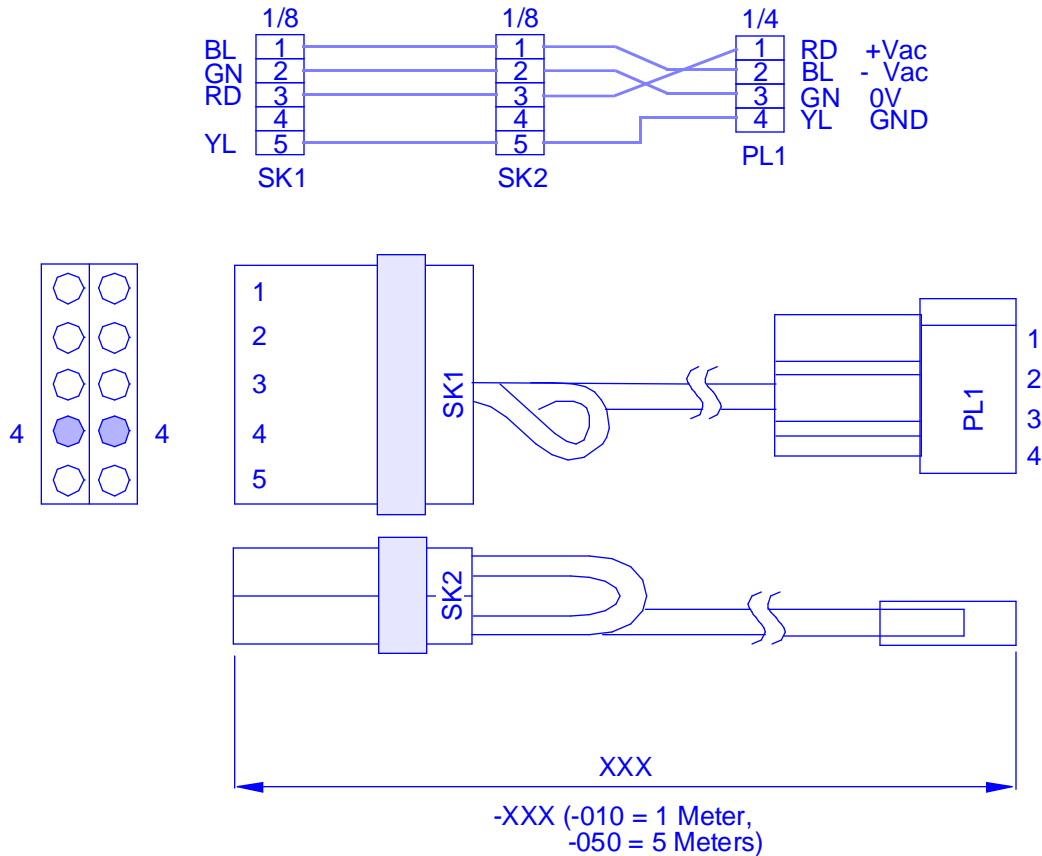


Figure 1-3 Extension Cable G022H005-xxx for MAU-1A/BP When Used in UK Installations (USS-1-AC)

USS-2-DC Shelf

Specific features of the DC-to-DC Universal System Shelf (USS-2-DC) are:

- Network Equipment Building Standards (NEBS) compatible chassis design. (At this time, only the ENMACS-2N and DC-3N backplanes are NEBS compliant, although many other backplanes are interchangeable and operates with this system.)
- Operates from -48 Vdc redundant or non-redundant station battery power source.

The power supply module(s) of the USS-2-DC Shelf converts -48 Vdc station battery power to ± 12 Vdc and distributes it to each product installed in the shelf.

The power supply of the shelf is a modular plug-in that provides isolated regulated output voltages of ± 12 Vdc, in redundancy with a second optional and identical plug-in power supply with a separate battery input, from a nominal battery voltage of -48 Vdc. The plug-in power supply module(s) pc card mounts vertically in specially provided slots in the shelf. When two power supplies are in a redundant configuration and power is turned on and off in one power supply, the output voltage to the plug-in cards is not affected.

The USS-2-DC Universal System Shelf consists of a metal assembly 19 inches wide, 12 inches deep, and 10.5 inches high. The assembly accommodates 16 GDC DataComm plug-in cards. Multiple card products occupy multiple slots in the shelf. The power supply compartment is on the front left hand side of the shelf separated from the pc card compartments by a steel partition.

USS-2-DC Shelf Equipment

Equipment list for the USS-2-DC Universal System Shelf, with part numbers and equipment available for the shelf is displayed in *Table 1-2, below*.

Table 1-2 USS-2-DC Equipment List

Item	GDC P/N
USS-2-DC/NR Universal System Shelf Assembly - Non-Redundant	010M080-001
USS-2-DC/R Universal System Shelf Assembly Redundant	010M080-002
DPS-9 Power Supply	041P033-001
Blank Filler Panel	010C040-001
Blank Rear Panel (2 slot)	010D401-001
Blank Rear Panel (4 slot)	010D402-001
Available Backplane Assemblies/Rackmount Kits*	
R/M Kits (Refer to <i>Table 1-1</i> .)	010J011-001 010J011-002 010J011-003
DC-1/BP (DataComm modems, domestic)	010B081-001
DC-2/BP (DataComm modems, international)	010B081-002
DC-3N/BP	010B187-001
ENMACS-2N/BP	048B018-001
GEN*NET 1261/BP (GEN*NET 1261)	065B013-002
INIC/BP (INIC Cards)	058B032-001
KILOMUX 1291/BP (KILOMUX 1291, domestic)	081B004-001
KILOMUX 1291/BP (KILOMUX 1291, international)	081B004-002
MAU-1A/BP	044B011-001
MAU-3/BP	044B013-001
MP-4/BP	010B223-001
PMC/BP (PMC-100 & DMA200)	048B015-002
* Each backplane assembly consists of the rear panel, harness card, hardware, and labels; the rackmount kit adds the plug-in card. Note: Refer to the appropriate GDC manual for the part numbers of the individual plug-in cards, strap options, operating procedures.	

Technical characteristics for the USS-2-DC Universal System Shelf are found in *Table 2-2 in Chapter 2, Installation*.

Power Supply Modules for the USS-2-DC

Power is provided by one or two DPS-9 power supply modules that convert nominal -48 Vdc input station battery power to ± 12 Vdc and distribute it to each modem installed in the shelf. The power supply of the shelf compartment accepts either one or two DPS-9 modular power supplies stacked vertically. The first supply powers the shelf with a full complement of 16 modems, while the second allows redundant operation and provides protection against power supply failure. When the second supply is connected to a separate station battery having a nominal voltage of -48 Vdc, there is protection for either loss of battery feed or a power supply failure.

Each power supply module plugs in from the front of the shelf. The front panel on each supply has a Power On/Off switch, an Alarm Norm/Disable switch, battery input and power supply output test points, and two LED status indicators. Directly behind the power supply compartment is the power supply harness card containing an eight-position terminal strip for connecting the station battery or batteries and twelve 0.045-inch square wire-wrap posts (6 posts per power supply) for connecting

external alarms. The power supply harness card and the shelf harness card are interconnected to distribute the 12-Vdc from the power supply module(s) to each of the 16 modem cards.

The shelf incorporates a power conditioning function. The 16 single slots may be divided in half, each with its own separate set of feeds back to the power supply harness card. The power supply harness card has four jumpers (R1-R4) which may be removed so that Slots 1 to 8 are separated from Slots 9 to 16. Therefore, each half of the shelf can be driven by its own power supply.

Backplane Options for the USS-2-DC

All backplane configurations are unique depending on the specific product to be housed in the USS-2-DC. Some consists of a glass epoxy harness card mounted on a metal panel. Others consist of simply a metal panel. The metal panel mounts the required output connectors, and the harness card mounts the signal interface connectors. A short cable harness mates to the associated power connector (1 of 8) mounted along the top rear edge of the shelf.

Each backplane assembly is keyed by a tab located at the bottom of the metal panel. This tab mates with a slot that is part of the shelf and prevents the backplanes from being inserted incorrectly in the shelf. *Figures 1-4 and 1-5* give you the pin designations and schematic for the power connector cable.

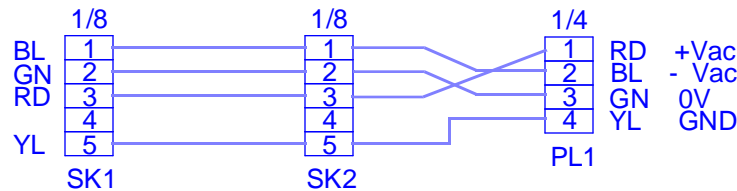


Figure 1-4 Power Connector Cable Pin Designations for the USS-2-DC

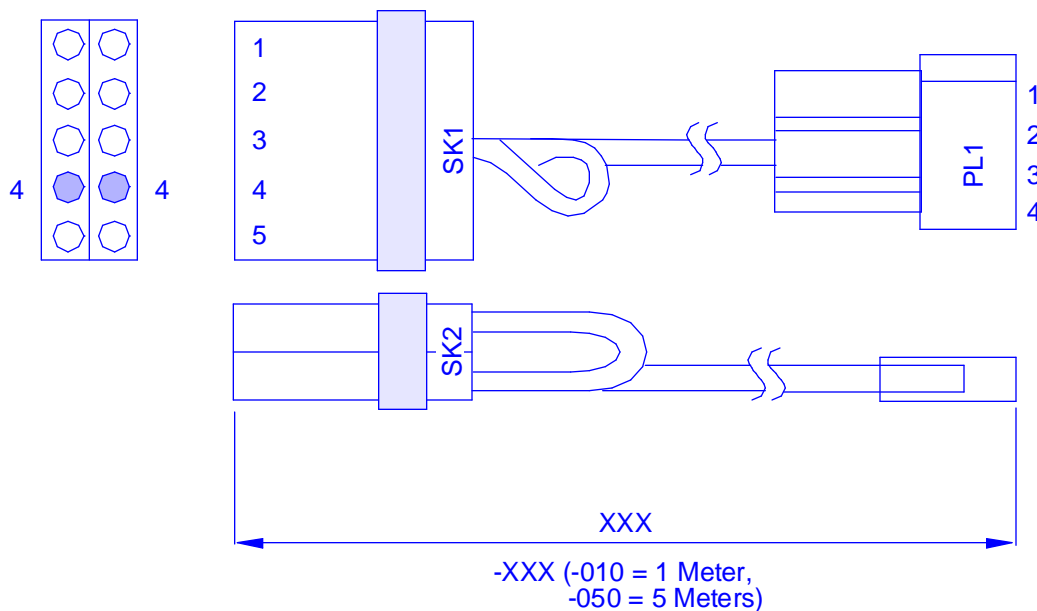


Figure 1-5 Power Connector Cable Schematic (USS-2-DC)

Next are descriptions for the presently available USS-2-DC backplane options. *Figure 1-6, Sheets 1 through 7*, illustrates each backplane.

Domestic Modem Backplane (DC-1/BP)

This is a domestic backplane which accepts all GDC DataComm data sets and occupies four slots (one quadrant) in the USS-2-DC shelf and mounts the following connectors (*Figure 1-6, Sheet 1*):

- 4 EIA/TIA-232-E female business machine connectors
- 4 EIA/TIA-232-E male telephone set/line connectors
- 4 six-position switched network/private line terminal strips (located under the plastic cover)
- For switched networks, 4 eight-position keyed modular line jacks that may be used instead of the terminal strips

International Modem Backplane (DC-2/BP)

Same as the DC-1/BP, except that it is used for international GDC data sets, mounts the following connectors (*Figure 1-6, Sheet 1*):

- 4 CCITT V.24 female business machine connectors
- 4 CCITT V.24 male telephone set/line connectors
- 4 six-position switched network/private line terminal strips

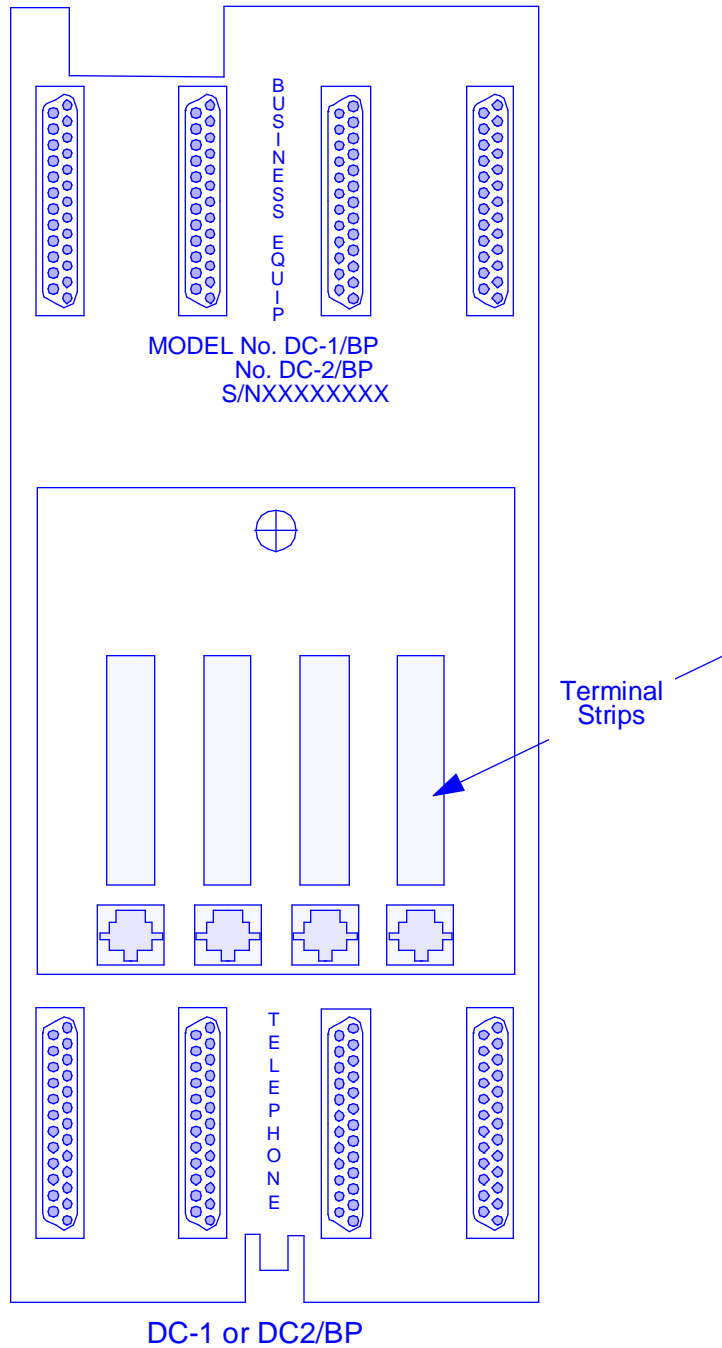


Figure 1-6 USS DC-to-DC Backplane Assemblies (Sheet 1 of 7)

KILOMUX Backplane (KM-16/BP)

This backplane occupies six slots in the shelf and furnishes up to 16 channels with or without a modem. The connectors on the backplane are (Figure 1-6, Sheet 2):

- 19 EIA/TIA-232-E female connectors: sixteen channel connectors, one aggregate connector, one business connector, and one supervisory port

- 1 EIA/TIA-232-E male auxiliary connector
- 1 eight-position keyed modular line jack connector
- 1 six-position switched network/private line terminal strip

KILOMUX Backplane (KM-4/BP)

This backplane occupies two slots in the shelf and provides 4 channels. The connectors on the backplane are (Figure 1-6, Sheet 2):

- 6 EIA/TIA-232-E female connectors: four channel connectors, one aggregate and one supervisory port.

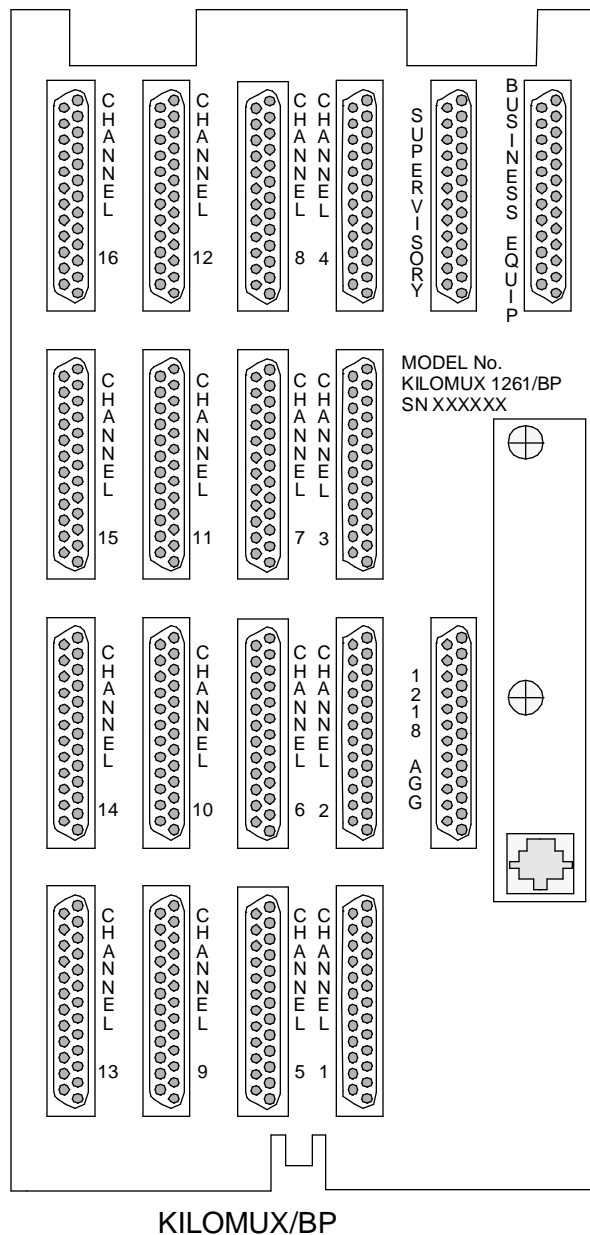


Figure 1-6 USS DC-to-DC Backplane Assemblies (Sheet 2 of 7)

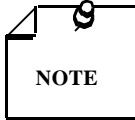
GEN*NET Backplane (GEN*NET 1261/BP)

This four-slot backplane provides up to eight channels with or without a modem. It mounts the following connectors (*Figure 1-6, Sheet 3*):

- 10 EIA/TIA-232-E female connectors: eight channel connectors, one aggregate, and one business equipment connector
- 1 EIA/TIA-232-E male auxiliary connector
- 1 eight-position keyed modular line jack
- 1 six-position switched network/private line terminal strip

Multiple Access Unit Backplanes (MAU-1A/3/BP)

Backplanes accommodate a modem/port sharing unit (MAU). The MAU-1A/BP uses two slots and has 5 EIA/TIA-232-E female connectors. The MAU-3/BP uses four slots and has 5 CCITT V.35 female connectors. Four of the five connectors are the ports, and one is used as the port common (*Figure 1-6, Sheet 3*).



When using the MAU-1A/BP in the UK, use Extension Cable G022H005-010 (one meter long) or G022H005-050 (five meters long) as illustrated below.

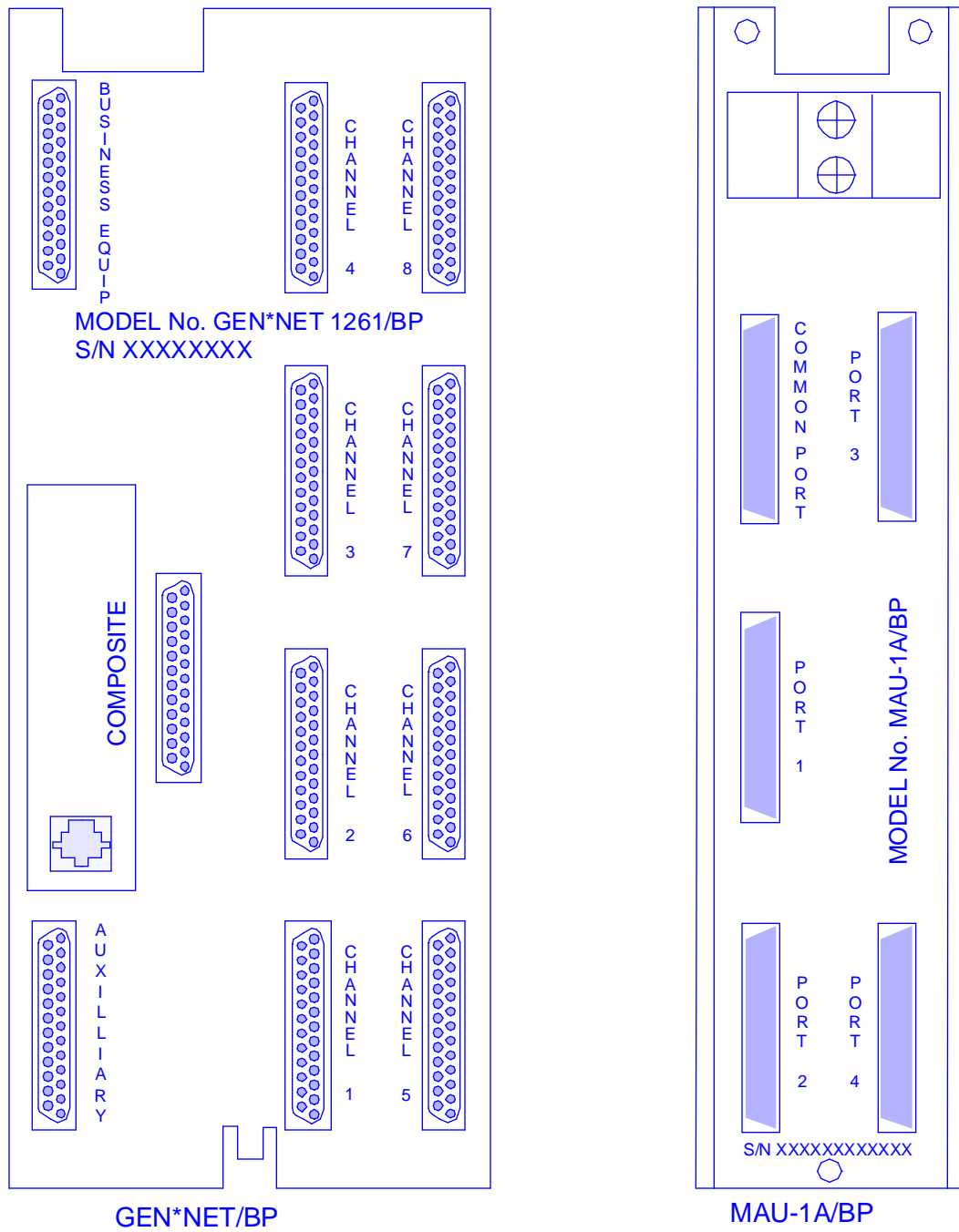


Figure 1-6 USS DC-to-DC Backplane Assemblies (Sheet 3 of 7)

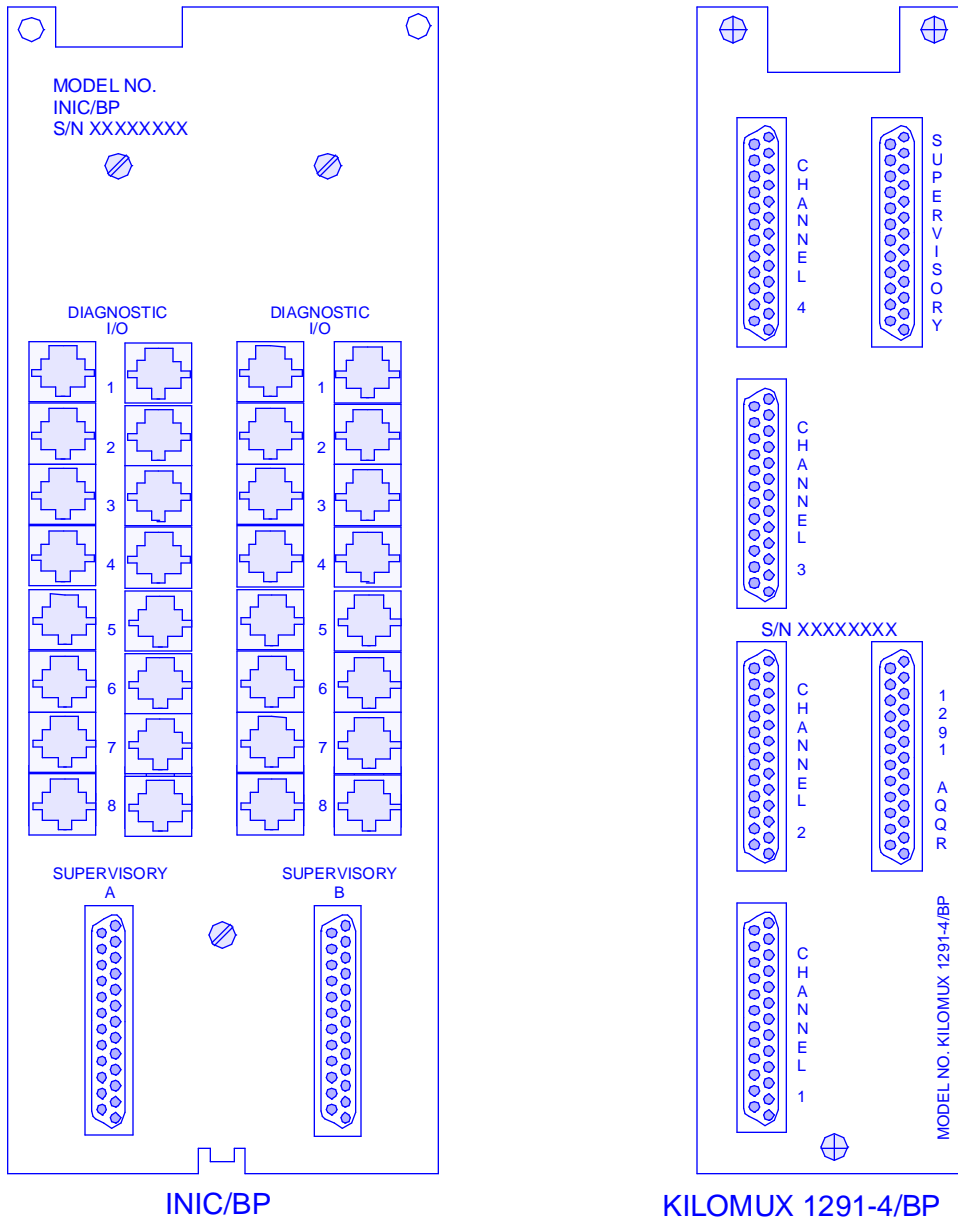


Figure 1-6 USS AC or DC Shelf Backplane Assemblies (Sheet 4 of 7)

PMC/BP Backplane

Backplane occupies four slots in the shelf and supports PMC-100 (ASCII) and DMA-200 (SNMP) network management cards for controlling DataComm 551 and 552A series CSU/DSCs. The PMC/BP module accommodates a number of possible T1 element combinations. (Refer to PMC-100 and DMA-200 data sheets.) Its connectors are as follows (Figure 1-6, Sheet 5):

- 4 eight-position keyed modular jacks and 4 four-position wire wrap pins for line connection
- 4 EIA/TIA-232-E (female) business machine connectors
- 1 EIA/TIA-232-E (female) communication link connector
- 4 EIA/TIA-232-E (male) auxiliary connectors

- 4 four-position terminal blocks
- 2 twenty-pin system bus connectors

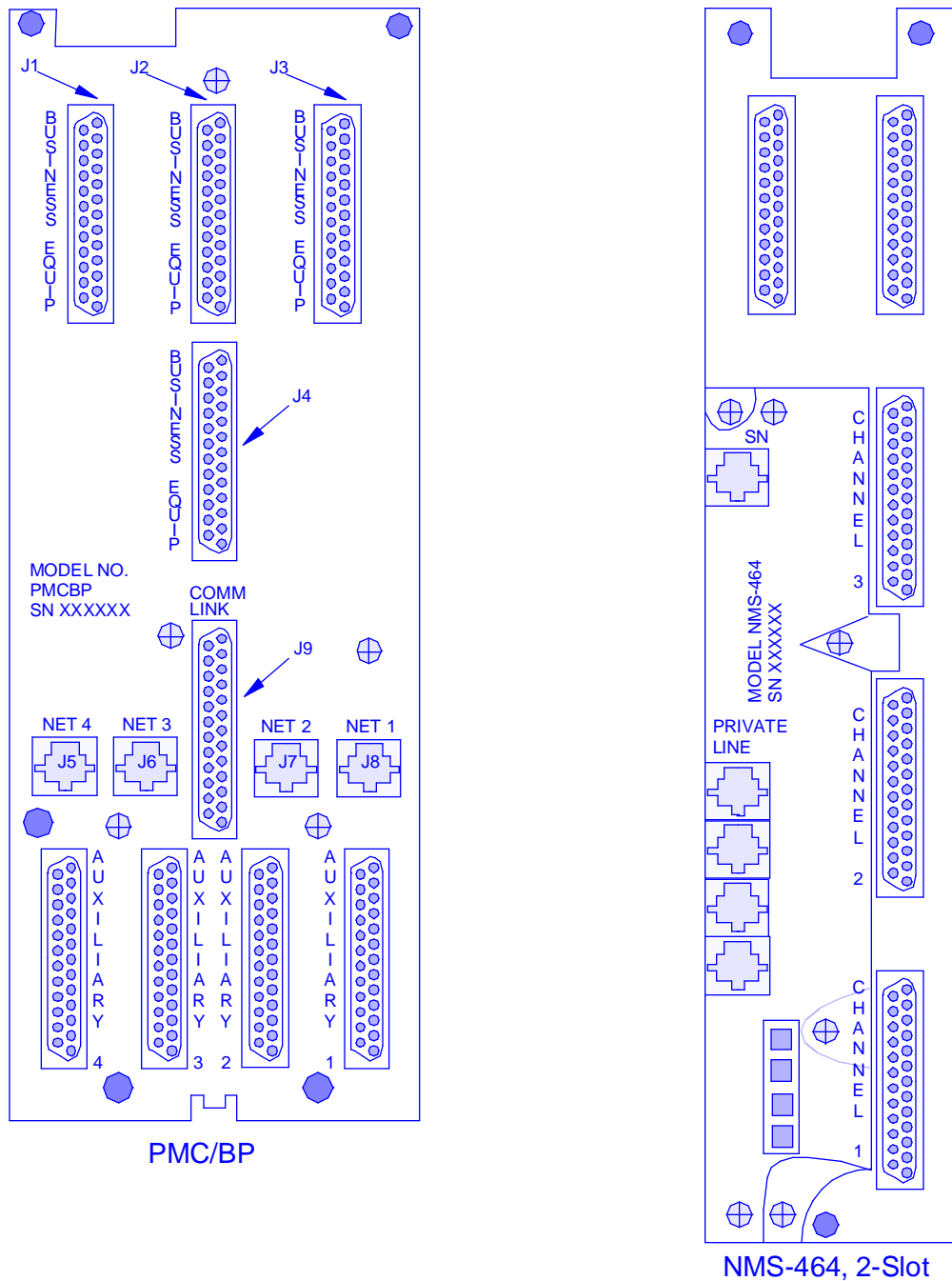


Figure 1-6 AC or DC Backplane Assemblies for USS Shelves (Sheet 5 of 7)

DC-3N Backplane

This backplane is NEBS compatible and is designed to support DataComm and NMS data sets. It occupies four slots in the shelf and its connectors are as follows (*Figure 1-6, Sheet 6*):

- 4 EIA/TIA-232-E (female) business machine connectors
- 4 EIA/TIA-232-E (male) telephone set/line connectors

- 4 six-position switched network/private line terminal strips
- 4 six-position wire wrap pins for line connection

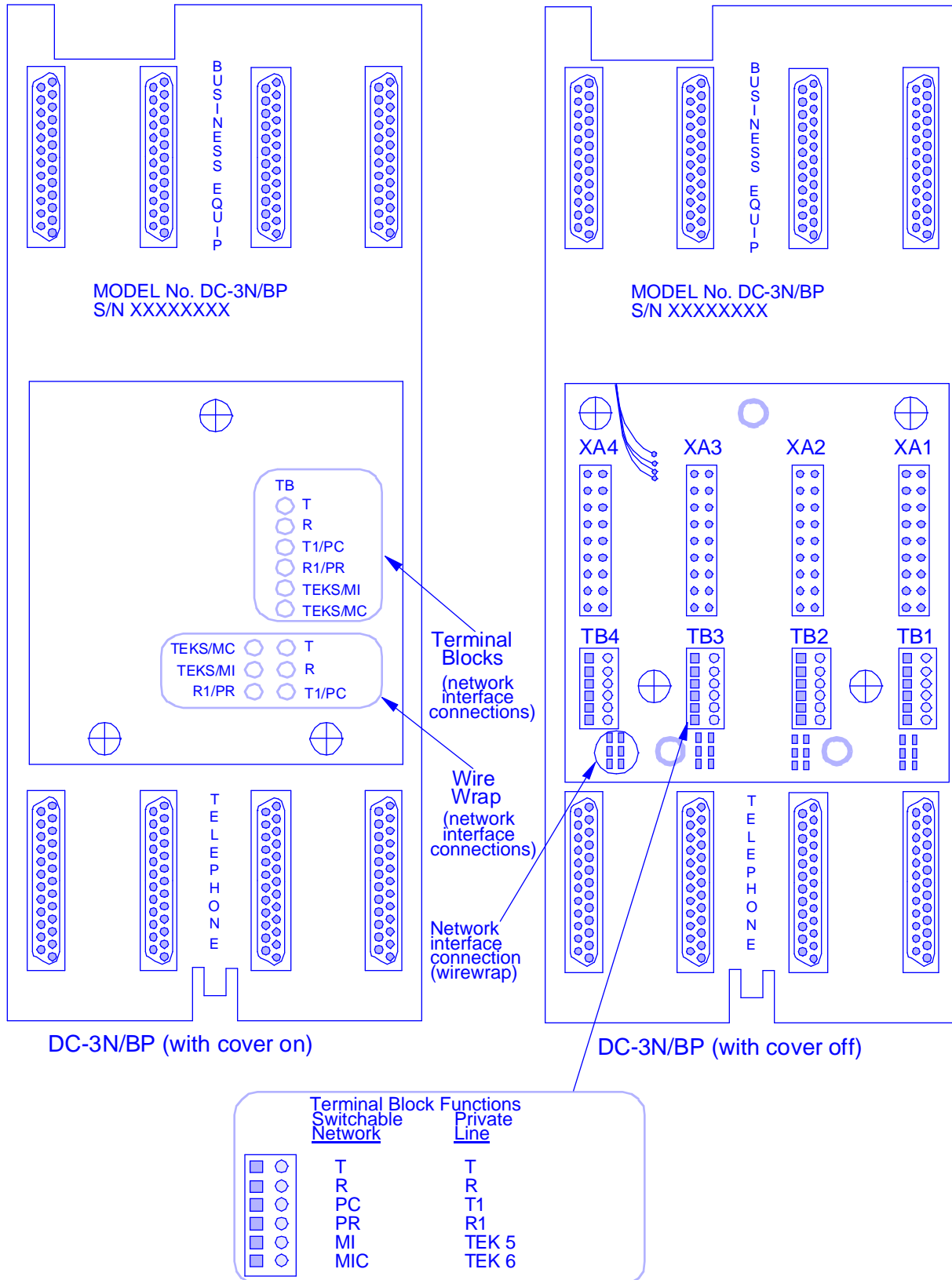
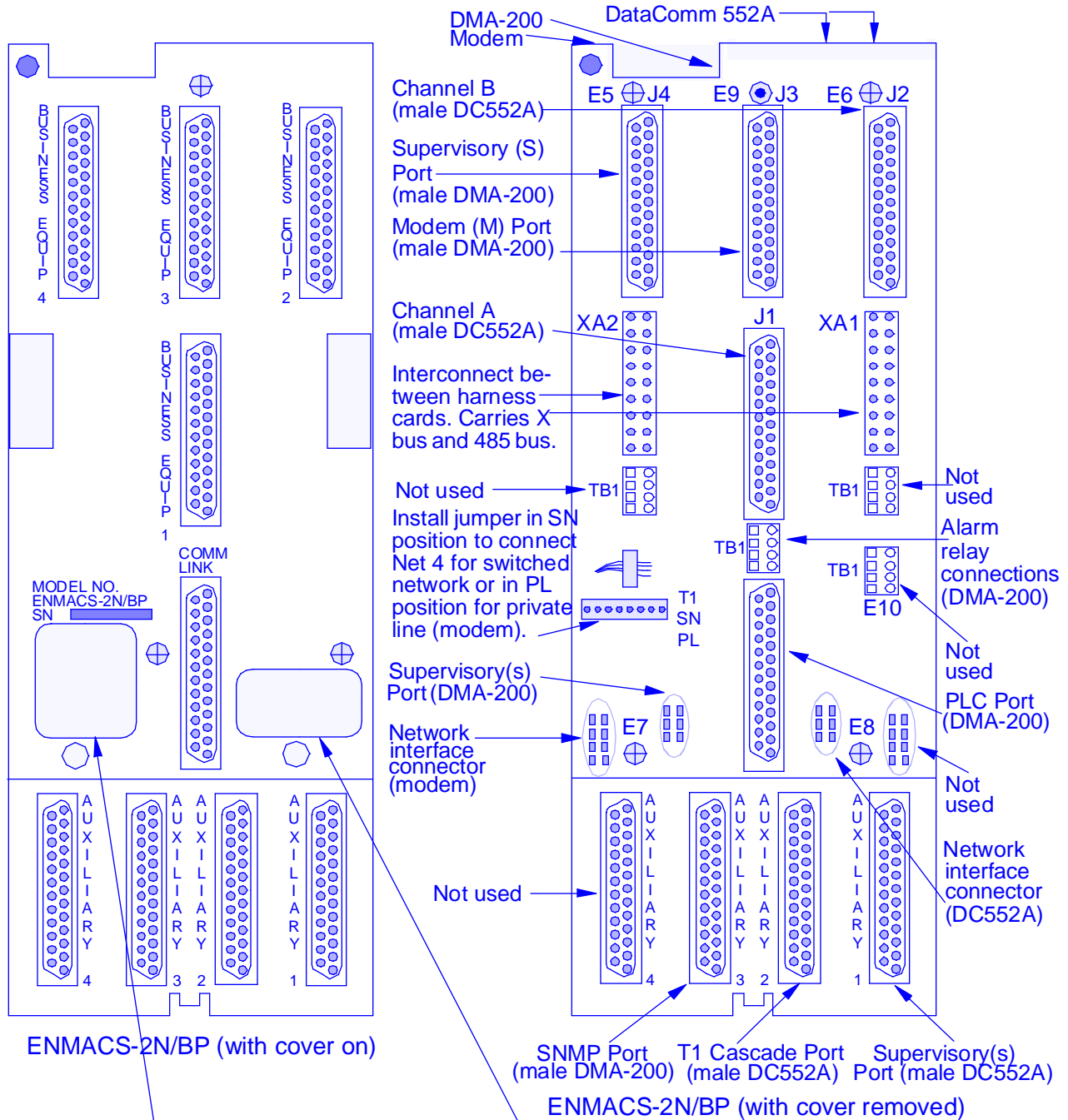


Figure 1-6 USS AC or DC Backplane Assemblies (Sheet 6 of 7)

ENMACS-2N Backplane

Backplane is NEBS compatible and is designed to support PMC-100 (ASCII) and DMA-200 (SNMP) network managed cards for controlling DataComm 551 and 552A series CSU/DSUs. The ENMACS-2N/BP accommodates a number of possible T1 element combinations. *Refer to PMC-100 and DMA-200 data sheets.* This backplane occupies four slots in the shelf and its connectors are as follows (*Figure 1-6, Sheet 7*):

- 3 six-position wire wrap pins for line connections
- 1 eight-position wire wrap pins= for line connection
- 4 EIA/TIA-232-E (male) business machine connectors
- 1 EIA/TIA-232-E (male) communication link connector
- 4 EIA/TIA-232-E (male) auxiliary connectors
- 4 four-position terminal blocks
- 2 twenty-pin system bus connectors



Typical 8-Pin Wirewrap Functions

E41	T1.5 SHLD	SN PR	PL T	E45	○ ○	E41
E42	T	T	NC	E46	○ ○	E42
E43	NC	MI	TEK5	E47	○ ○	E43
E44	R1	NC	R1	E48	○ ○	E44
E45	SHLD	PC	R			
E46	NC	MIC	TEK6			
E47	R	R	NC			
E48	T1	NC	T1			

Typical 6-Pin Wirewrap Functions

SH.GND	○	○	SH.GND
T	○	○	R
R1	○	○	T1

Notes

1. Typical harness card connectors, modem, DMA-200, and DataComm 552A cards installed in shelf.
2. DMA-200 can be installed in any slot, but only one/quadrant/shelf.
3. For other possible arrangements, refer to DMA-200 manual 048R165-000.

Figure 1-6 USS AC or DC Shelf Backplane Assemblies (Sheet 7 of 7)

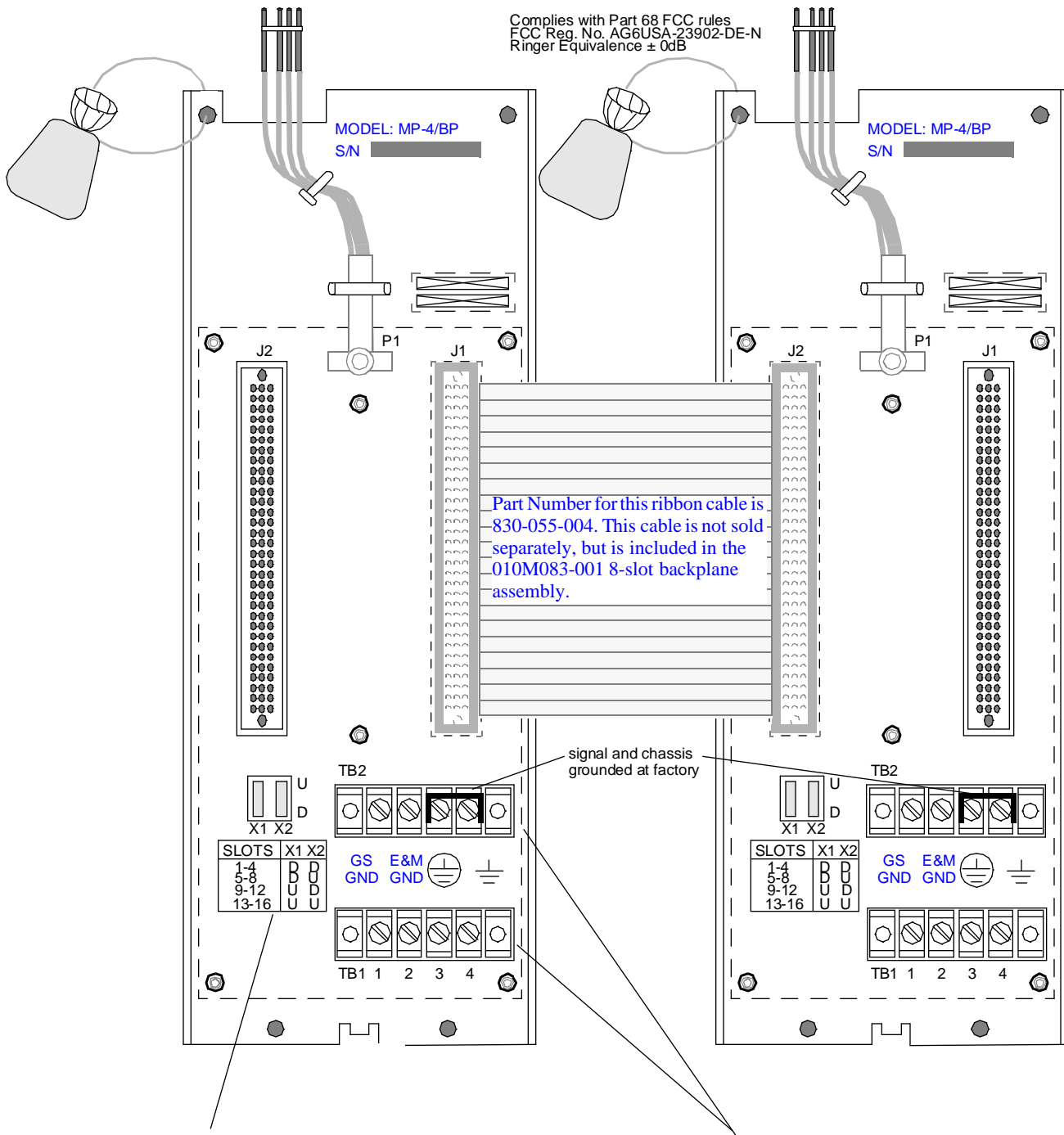
Metroplex 6000 (MP-4/BP)

This is a 4-slot backplane which accepts all Metroplex 6000 cards. It occupies four slots (one quadrant) in the USS-1 shelf. *See Figure 1-7.* Four 4-slot Metroplex systems fit in one shelf. You can connect two 4-slot backplanes together with a ribbon cable assembly to create an 8-slot backplane. Connect each backplane individually to the power bus. Two 8-slot backplanes fit in one shelf. The ribbon cable assembly has keyed connectors which fit only one way. There is a red stripe along one edge of the ribbon cable, indicating Pin 1. Orient the cable so that this stripe is along the bottom.

There are two jumpers on the rear of the Metroplex 6000 backplane for setting the slot addresses. For a 4-slot backplane, set both X1 and X2 to D (Down). When two 4-slot backplanes are connected together to form an 8-slot backplane, set both X1 and X2 to D on the leftmost backplane when looking from the front (Slots 1-4) and set X1 to D and X2 to U (Upper) on the rightmost backplane (Slots 5-8). Jumper positions for Slots 9-12 and 13-16 are not supported.

You need to set a switch on the Platform card to tell it whether you are using a 4-slot system or an 8-slot system. Set switch S1-2 to 4-slot or 8-slot as required. *Refer to the Platform card manual 086R602-001 for more details.*

Complies with Part 68 FCC rules
 FCC Reg. No. AG6USA-23902-DE-N
 Ringer Equivalence \pm 0dB



Part Number for this ribbon cable is 830-055-004. This cable is not sold separately, but is included in the 010M083-001 8-slot backplane assembly.

signal and chassis grounded at factory

Slots	1-4	5-9	9-12	13-16		1	2	3	4	
Jumpers						TB1	ANG	ANG RET	-TB	+TB
						TB2	GS GND	EM GND	CH GND	SIG GND
	X1 X2 (default)	X1 X2	X1 X2	X1 X2						

Two USS 4-Slot Assys. MP-4/BP--Typical

Figure 1-7 USS 8-Slot Backplane for Metroplex 6000

All connectors for connection to the network and to business equipment are on the front panels of the Metroplex cards. To route cables from the front panels to the rear of the rack, use the optional cable tray, GDC part number 010B224-001. This cable tray occupies 1 rack unit or 1.75 inches of rack space below the USS-1 shelf.

There are two terminal blocks on the rear of the Metroplex 6000 backplane (*See Figure 1-7*). TB1 is not used. TB2 provides connections to Ground Start ground (GS GND), E&M ground (E&M GND), Signal ground and Chassis ground. Note that chassis ground is common to the whole shelf. Signal ground, GS GND and E&M GND are not connected between backplanes, unless the backplanes are connected with the ribbon cable to form an 8-slot backplane.

Figure 1-8 presents the latest GDC DC-X type USS backplanes, which include:

Name	Shelf Slots	Products
DC-1/BP		
DC-2/BP International Use Only)	4	DataComm data sets NMS data sets
DC-3N/BP (NEBS Compatible)		

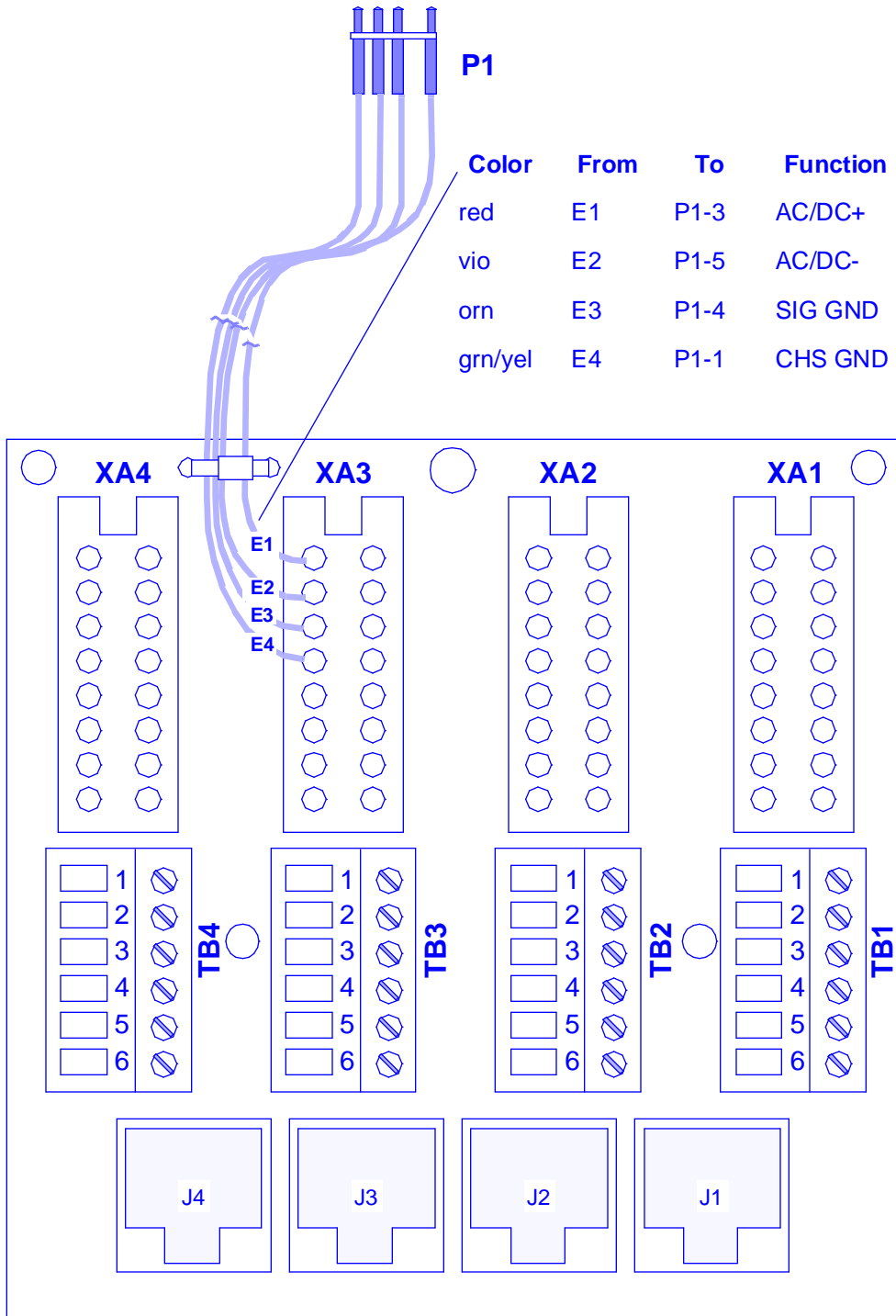


Figure 1-8 DC-X H.C. USS Backplane Assembly

2 Installation

Unpacking and Handling

As soon as you receive this unit from the transportation company, inspect the shipping container for obvious signs of mishandling or abuse. Inspect the shelf for damage. Verify that the shipment agrees with the shipping list. Retain the shipping list for reference or reordering. If you see any damage or shortage, notify the shipper immediately. Do not discard shipping containers or packing material. Retain for transporting or reshipping the unit.

Installation

Grounding and Safety

For safety, connect chassis of the AC or DC powered shelf to protective (earth) ground. Normally you do this with the power cord ground wire, or else with a separate ground wire from a grounded post (chassis ground) on the rear panel. *Figure 2-1* shows an optional ground connection on an AC or DC shelf using an anti-rotational lug or a ring-lug terminal.



Field connections are made to the shelf frame by crimping a 10 or 12 AWG wire to one of the lugs in the terminal lug kit GDC Part No. 010K030-001 using Burndy Electric Co. Hytool Type Y10D. Call Burndy customer service 1-800-346-4175 for tool order information. Attach the lug and wire to the left side plate of the shelf as shown in Figure 2-1 using the hardware supplied in the kit.

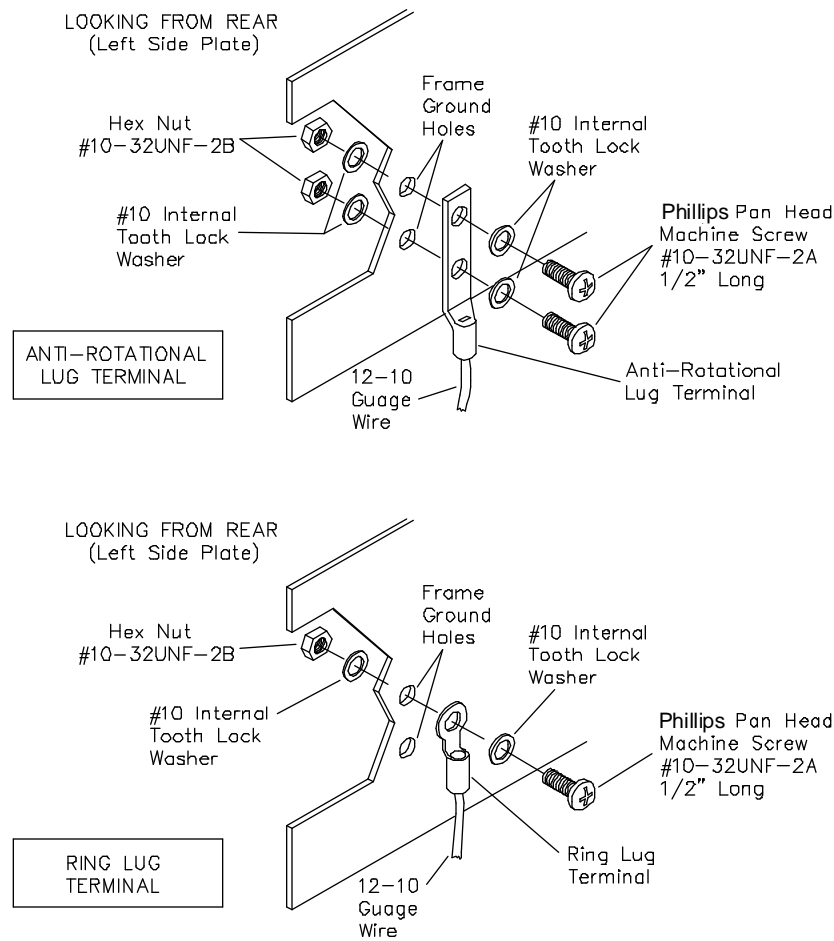


Figure 2-1 USS-1-AC and USS-2-DC Shelf Frame Ground Connection



Do not apply power to the shelf assembly until all line connections have been made and all selectable options (whether hard options or the soft options available on the NMS products) have been made on the plug-in cards.

Install the USS-1-AC or USS-2-DC shelf in a well-ventilated location. Do not locate the unit directly above other equipment (such as power supplies) generating lots of heat. The ambient temperature should not exceed 122°F (50°C).

The USS-1-AC and USS-2-DC shelves are equipped with reversible flush-mount adapter ears which let you install them in either a standard 19-inch (483mm) wide equipment rack or a 23-inch (584mm) wide rack. They are secured with the available hardware through eight slotted holes in the flanges at the front edges of the shelf assembly. Dimensions and other specifications are given below for the USS-1-AC (See Table 2-1) and USS-2-DC (See Table 2-2) shelves.

An adapter kit (010J011-001) is also available for mid-mounting.

Table 2-1 Dimensions and Other Specifications for the USS-1-AC Shelf

Item	Characteristic
Physical	
Height	10.5 in. (267 mm)
Width	19 in. (483 mm)
Depth	13.5 in. (343 mm)
Weight	23.25 lb (10.54 kg)
Capacity	16 plug-ins on 0.9-in. (23 mm) centers 8 plug-ins on 1.8 in. (46 mm) centers 4 plug-ins on 3.6-in. (92 mm) centers
Electrical	
Power supply	117 V ac +10%
Input	220 V ac 100 V ac 240 V ac
Output	Four independent center-tapped 22 V ac (nominal) transformers each serving four plug-in slots.
Wattage	160 watts maximum (16 cards) 10 watts for each card slot +40 watts maximum (power supply).
Power cord	6-foot long (min.) cord with molded three-prong plug.
Fusing	
Transformer	Two 1.5 A 3 AG slo-blo fuses (117 V ac)
Primary	Two 1.0 A 3 AG slo-blo fuses (220 V ac)
	Two 2.0 A 3 AG slo-blo fuses (100 V ac)
	Two 1.0 A 3 AG slo-blo fuses (240 V ac) } international
	(Part Nos. 1A = 215-310-100; 2A = 215-310-200).
	Each fuse protects two power transformers.
Secondary	Each low-voltage ac secondary leg fused on plug-in pc cards.
Open fuse indication	Two red panel mounted LEDs light if fuses are intact.
Environmental	
Operating temperature	0 to 50 ⁰ C (complete units)*
	0 to 70 ⁰ C (individual cards)*
Storage temperature	
Humidity	Up to 95% relative humidity without condensation
Altitude	
Operating:	10,000 ft.
Non-operating:	40,000 ft.
* Derate operating temperature by 1 ⁰ C/1000 ft. above sea level.	

Table 2-2 Dimensions and Other Specifications for the USS-2-DC Shelf

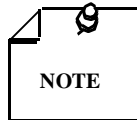
Item	Characteristic
Size	Height 10.5 in. (267 mm) Width 19 in. (483 mm) Depth 12 in. (305 mm)
Weight	17.1 lb (7.8 kg) shelf only, 2.5 lb (1.1 kg) more with one power supply)
Capacity	16 plug-ins on 0.9 in. (23 mm) centers 8 plug-ins on 1.8 in. (46 mm) centers 4 plug-ins on 3.6 in. (92 mm) centers
Electrical	
Power Supply	
Input	-42 to -56 Vdc from station battery
Output	+ 12Vdc \pm 4% 0.25A to 7.5A and -12Vdc \pm 4% 0.25A to 6.6A
Wattage	160 watts maximum (16 cards installed)
Power dissipation	Less than 35 watts at full load, per supply
Fuse Size/Type	7A 3AG fuse on power supply module front panel (P/N 215300-700)
Open fuse indication	Red Normal front panel LED is off when fuse is open and Power On/Off switch is in ON position.
Input under/over voltage protection	The power supply will not be damaged by any input from 0 to 56 Vdc. Shutdown occurs at an input voltage of approximately 27 Vdc.
Reverse input voltage protection	Protective circuitry and fusing prevent damage from reverse battery-polarity connection.
Output over-voltage protection	The power supply will shutdown due to an internal malfunction causing an over-voltage condition. Maximum output is \pm 15Vdc.
Overload protection	The power supply will not sustain damage due to an indefinite overload or short circuit on the \pm 12 Vdc output lines. Maximum overload and short-circuit current are 20A on both \pm 12 Vdc lines.
Environmental	
Temperature*	
Operating	0°C (+32°F) to 55°C (+131°F)
Non-operating	-40°C (-4-°F) to + 85° C (+185°F)
Humidity	Up to 95% without condensation
Power supply connectors	
Battery	One 6-position screw-type barrier strip on the power supply harness card for connecting one or two station batteries. Also provides connections to signal and frame grounds.
Alarm (A and B)	Two sets of 0.045" wire-wrap posts which provide remote indication from each power supply in the event of power supply failure. Provided on isolated dual form-C relay contacts. One set can be activated/deactivated by the front panel Alarm Enable/Disable switch. Relay contacts rated at 0.25A at 140V with a resistive load.
* Derate operating temperature by 1° C/1000 ft. above sea level.	

GDC USS-1-AC and USS-2-DC shelves, each with a full complement of DataComm/NMS products, may be stacked in the following ways:

- Free-Air Open-Rack Mounting — Up to four fully loaded GDC USS-1-AC and USS-2-DC shelves may be stacked closely spaced in a free-air open rack. When five or more are to be stacked, the shelves must be spaced 1.5 inches (38mm) apart to permit heat dissipation between the shelves.
- Forced-Air Vented GDC EP-3 Cabinet Mounting — A GDC EP-3 (or equivalent with a 380-cfm air flow through the cabinet) can handle up to five closely spaced fully loaded GDC USS-1-AC shelves; and a PP-4/DC enclosed cabinet (or equivalent with a 300-cfm air flow through the cabinet) can handle up to six closely spaced fully loaded GDC USS-2-DC shelves--with minimum heat rise.

Each GDC plug-in card contains an option jumper plug that connects signal ground and chassis ground together (common) or isolates them (separate) through a 100-ohm resistor. Note that if one plug-in quadrant (four slots) is optioned for common signal and chassis ground, all plug-ins in that group have the signal and chassis ground tied together. This is because of the common signal and chassis grounds on the various backplane adapters for each quadrant.

You can install the backplane adapters and plug-in cards in any USS-1-AC Shelf, regardless of the backplane or type of shelf (domestic or international).



If the USS-1-AC shelf is originally set up by GDC Systems Applications personnel (for NETCON or other system applications) it should not be modified by the customer.

Backplane Installation for the USS-1-AC

The USS-1-AC shelf is designed to prevent the backplanes and plug-in cards from being installed in the wrong position. Each backplane kit contains the appropriate backplane(s), the plug-in cards, hardware, and front panel labeled. To install the backplanes, proceed as follows:

1. Place backplane(s) at the proper location at the rear of the shelf.

There is a metal tab on the bottom of each backplane that mates with a slot at the bottom of the shelf to ensure the backplane is mounted only one way.

2. Start the 4-40 Phillips head screws to hold the backplane(s) in place. Do not tighten.



The MAU-2 and MAU-3 plug-in cards have connectors mounted on the card, and the backplanes for these products have matching holes in the metal panel. The card(s) are inserted from the front of the shelf as usual, but are held in the shelf by placing the standoffs, which are included in the kit, between the cards front panel and the top and bottom edge of the shelf. Screws, which are also included, are inserted through the holes in the cards front panel through the standoffs and into the threaded holes at the top and bottom edges of the shelf. Be sure that the small power plug on the card mates with the backplane harness card before tightening the screws.

If you look from the front of the shelf, you can see the inside of the backplane, silk-screened with the designation of the card or cards that plug into it.

3. Apply the slot I.D. label supplied with the backplane to the front of the shelf, along the bottom card frame outer edge so that the black triangles line up with the card slots associated with that product as shown in *Figure 2-2*.

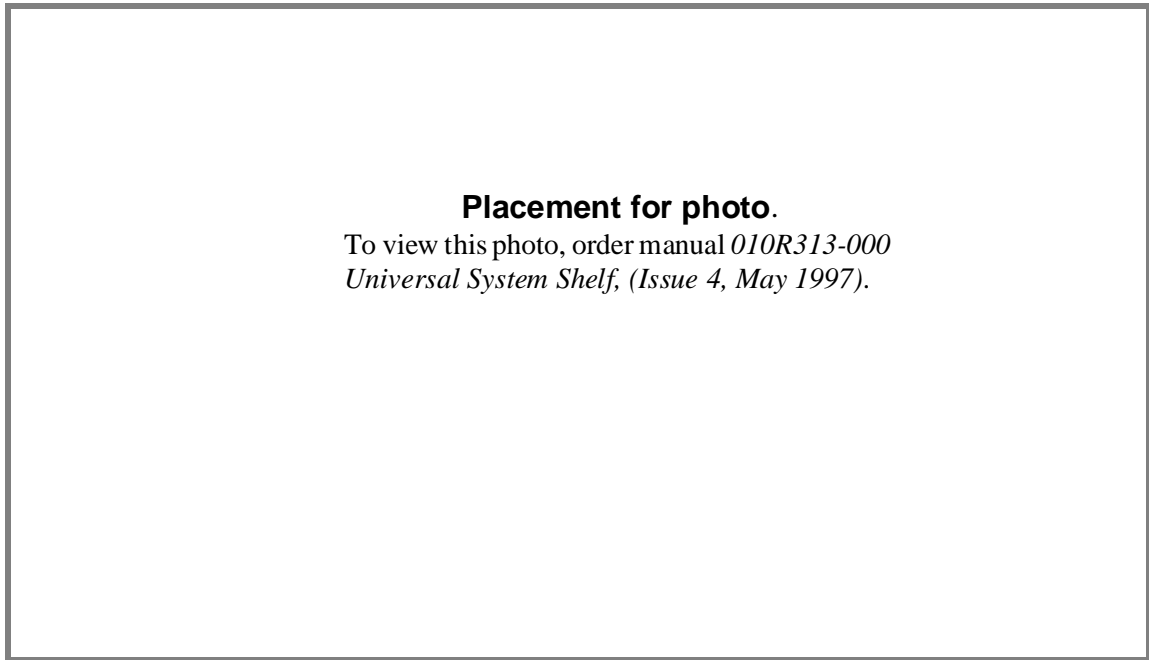


Figure 2-2 Front View of 117 V (AC USS-1) Shelf Showing Typical Slot Identification

4. Install the plug-in card from the front of the shelf by sliding it into the card guides. Seat firmly into the mating connectors on the backplane, using both hands.
5. Tighten the backplane screws. This assures perfect alignment of the cards in the card guides and the mating connectors on the backplane, and allows for easy removal of the cards.
6. Plug the four-pin cable into the connector that is visible through the cutout in the upper corner of that particular panel. On the KILOMUX product there are two four-pin cables, which are plugged into the connector located directly above the cable. See *Figure 2-3*.

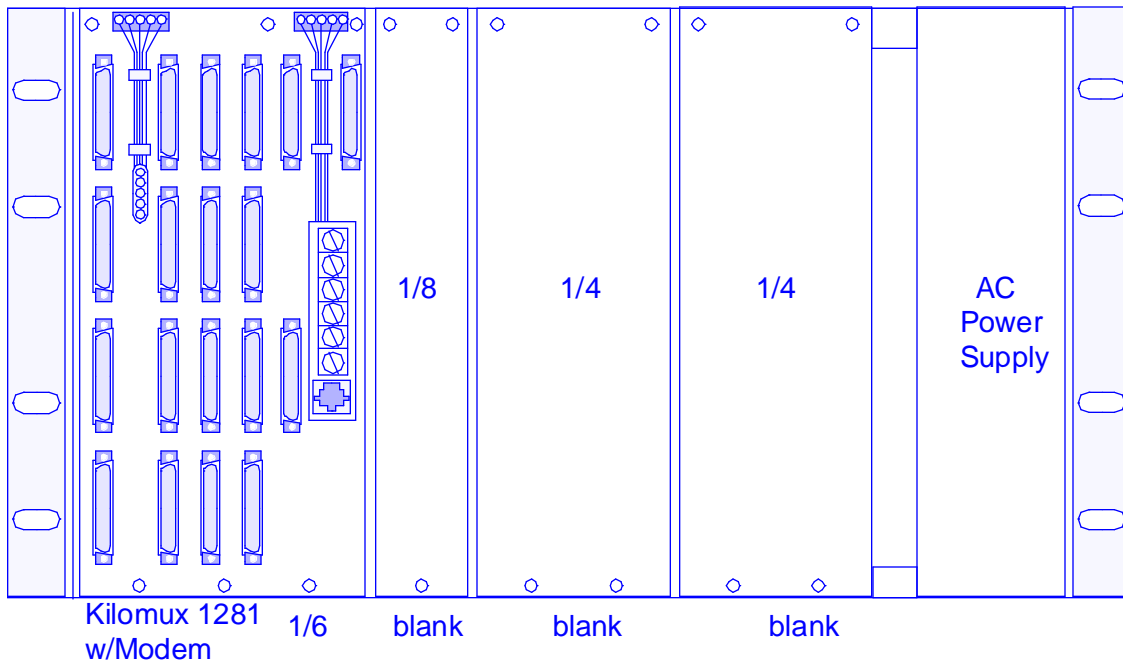


Figure 2-3 Rear View of Typical USS-1-AC Shelf

Each four power transformer for the shelf is rated at 40 watts and each supplies a quadrant (four adjacent slots): Quadrant 1 (Slots 1-4), Quadrant 2 (Slots 5-8), Quadrant 3 (Slots 9-12), and Quadrant 4 (Slots 13-15). Slots are numbered from left to right, facing the front of the shelf.

Install multicard plug-ins so that they do not physically bridge two quadrants, so as not to exceed the power rating of the transformers. For example, if the plug-in that is inserted occupies 6 slots (KILOMUX 1281/BP), a blank 2-slot panel or 2-slot product should be installed next to it, so that the power rating per quadrant is not exceeded. *Figure 2-3* illustrates this application.

Many different combinations may be used in the USS-1-AC shelf. *Figure 2-3* illustrates a typical USS-1-AC shelf arrangement, and *Tables 2-3* through *2-6* list the (USS-1-AC Shelf) cables needed to connect the available backplane products.

Once all the connection between the shelf and the associated components have been completed, all options have been checked, and the plug-ins have been installed, you may energize the shelf. The shelf is equipped with a captive 6-foot (min.) power cord terminated in a molded, three-prong plug. Connect the plug to a 117-V ac convenience outlet not under switch control to complete the installation.



The USS-1-AC shelf should be powered by the same ac source as the business equipment with which the unit interfaces to prevent large circulating currents because of differences in ground potential. If it is not possible to determine whether the equipment is powered by the same ac source, it should be confirmed that a potential difference of less than 0.25 V rms (as measured with an appropriate multimeter) exists between the grounding circuits of the respective power outlets.

Cabling Instructions for the USS-1-AC Shelf

Table 2-3 Cables Used (USS-1-AC Shelf) for MAU-1A/2/3 (MAU-1A/BP, MAU-2/BP, MAU-3/BP)

Description of Cables	GDC Part No.
MAU-3/BP	
MAU-3 Aggregate to MAU-3 Channel	027H516-001
MAU-3 Aggregate to Customer DCE	027H516-XXX
MAU-3 Aggregate to Customer DTE	027H516-XXX
MAU-3 Channel to MAU-3 Aggregate	027H516-001
MAU-3 Channel to Customer DCE	027H516-XXX
MAU-3 Channel to Customer DTE	027H516-XXX

MAU-1A, 2, 3

Table 2-4 Cables (USS-1-AC Shelf) Used for DataComm/NMS Modems (DC-1/BP, DC-2/BP)

Description of Cables	GDC Part No.
Modem VF to Private Line (JMB)	024H122-XXX
Modem VF to Private Line (42A or 66E3)	023H101-020
Dial Line (Programmable) to Switched Network	830-028-814
Dial Line (Permissive) to Switched Network	830-027-414
To MAU-1A Aggregate	830-040-002 or 028H502-XXX
To 1261 Aggregate	028H402-XXX
To 1281 Channel	028H311-XXX
To 1281 Aggregate	830-040-002 or 028H502-XXX
To Customer DTE	028H502-XXX
To Multiport Channel	028H311-XXX
Interface Adapter Card (058P039-001) Cables:	
Master NIC to NMS Master (J1)	358H055-XXX
Master Through MUX to NMS Master (J1)	028H314-XXX
Daisy-Chain Master (J1) to NMS Master (J2)	358H056-006 or 058H002-XXX
Daisy-Chain Master (J1) to NMS Remote (J1)	058H001-005

**DataComm / NMS
Two or Four Slot Modem**

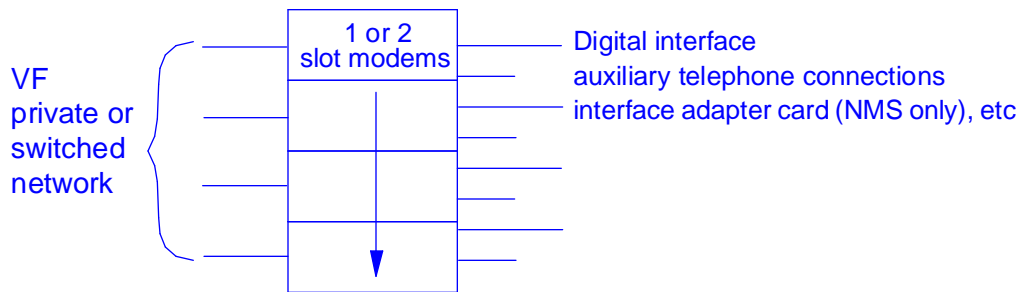
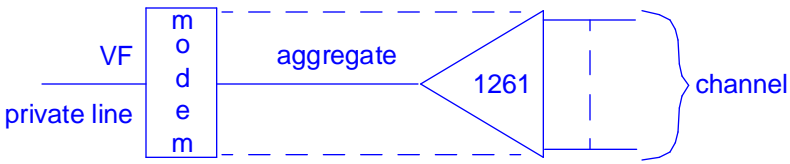


Table 2-5 Cables (USS-1-AC Shelf) Used for 1261 GEN*NET
(GEN*NET 1261/BP)

Description of Cables	GDC Part No.
DC Modem to 1261 Aggregate (232)	028H502-XXX
1261 (232) Aggregate to Customer DCE	028H502-XXX
1261 (232) Aggregate to 1281 Channel	028H402-XXX
1261 (232) Aggregate to Multiport Channel	028H402-XXX
1261 (232) Aggregate to DBU-3	028H502-XXX
1261 (232) Channel to DC Modem	028H311-XXX
1261 (232) Channel to Customer DTE	028H502-XXX
1261 (232) Channel to Customer DCE	028H502-XXX
1261 (232) Channel to MAU-1A Channel	830-040-002 or 028H502-XXX
1261 (232) Channel to MAU-1A Aggregate	830-040-002 or 028H502-XXX
	For length > 10"

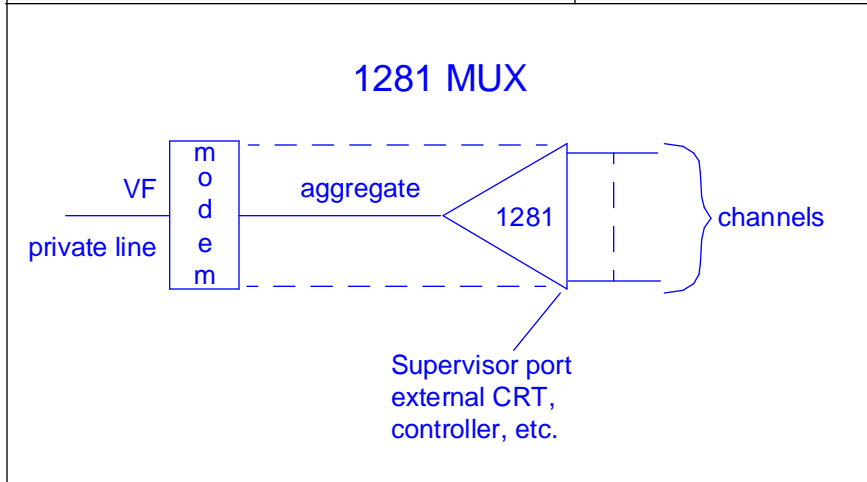
1261 MUX



The diagram illustrates the connection for a 1261 MUX. On the left, a 'private line' is connected to a 'VF' (Voice Facility) interface. This interface is connected to a 'modem' block. The modem is connected to an 'aggregate' block. The aggregate is connected to a triangular '1261' multiplexer. The output of the multiplexer is connected to a 'channel' block, which is represented by a bracketed area with a dashed line indicating its internal structure.

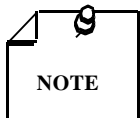
Table 2-6 Cables (USS-1-AC Shelf) Used for 1281 Kilomux (Kilomux 1281/BP)

Description of Cables	GDC Part No.
DC Modem to 1281 (232) Aggregate	028H502-XXX
Customer DCE (232) to 1281 (232) Aggregate	028H502-XXX
Customer DCE (422) to 1281 (422) Aggregate	027H501-XXX Adapter and 027H603
Customer DCE (V.35) to 1281 (V.35) Aggregate	027H528-XXX
1281 Channel (232) to MAU-1A	830-040-002 or 028H502-XXX
1281 Channel (232) to DC Modem	028H311-XXX
1281 Channel (232) to Customer DCE	028H311-XXX
1281 Channel (232) to Customer DTE	028H502-XXX
1281 Channel (232) to 1261 Aggregate	028H502-XXX
1281 Channel (232) to 1281 Channel	028H311-XXX
1281 Channel (232) to Multiport	028H311-XXX
1281 Supervisor Port to Customer DCE	028H502-XXX
1281 Supervisor Port to Customer DTE	028H311-XXX
1281 Supervisor Port to DC Modem	028H502-XXX
1281 Supervisor Port to NETCON	022H002-XXX



Backplane Installation for the USS-2-DC

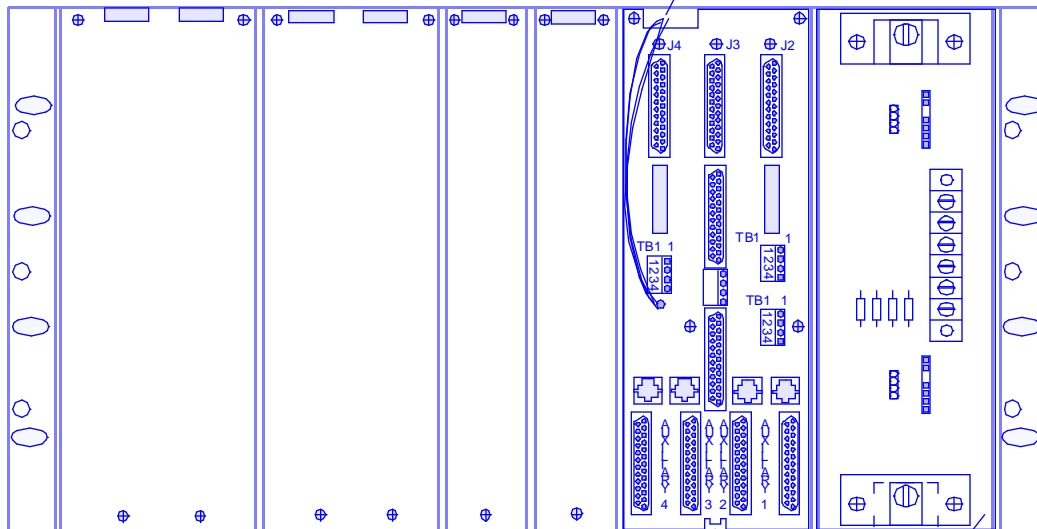
Installing the backplane adapters and the plug-in cards in the USS-2-DC shelf can be done regardless of the backplane or the type of shelf (domestic or international).



If the USS-2-DC shelf is originally set up by GDC Systems Applications personnel (for other system applications), the customer should not modify the shelf.

The USS-2-DC shelf (See Figure 2-4) is designed for installing backplanes and plug-in cards in the any location at the rear of the shelf. Each backplane kit contains the appropriate backplane(s), the plug-in cards, hardware, and front panel label. To install the backplanes, proceed as follows:

These connections are keyed to ensure that they are plugged in correctly.

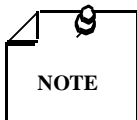


Tab on bottom edge of each backplane fits into slot on the rear panel of shelf.

See Fig. 2-6 for details of this module, which is the 48-VDC station battery.

Figure 2-4 Rear View of Typical USS-2-DC Shelf

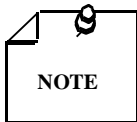
1. Remove the blank panel covers (if present) from the location at which you want to install the backplane. See Figure 2-4 above. Save the 4-40 Phillips screws that held the blank cover in place for use in mounting the backplane.



NOTE

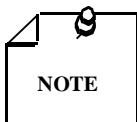
A full width backplane can replace either one full width blank cover or two half-width blank covers. The spacing of the mounting screws prevents the backplane from being installed upside-down.

2. Position the backplane over the location where it is to be mounted. There is a metal tab on the bottom of each backplane that mates with a slot at the bottom of the shelf. See Figure 2-4. Start the 4-40 Phillips head screws to hold the backplane(s) in place. Do not tighten.



NOTE

The MAU-3 plug-in cards have connectors mounted on the card, and the backplanes for these products have matching holes in the metal panel. The card(s) are inserted from the front of the shelf as usual, but are held in the shelf by placing standoffs, which are included in the kit, between the front panel of the card and the top and bottom edges of the shelf. Screws, which are also included, are inserted through the holes in the front panel of the card through the standoffs and into the threaded holes at the top and bottom edges of the shelf. Be sure that the small power plug on the card mates with the backplane harness card before tightening the screws.



NOTE

Refer to Tables 2-14 and 2-15 for the list of cables to use to maintain NEBS compatibility for the DC-3N and ENMACS-2N, respectively.

The inside of the backplane, looking from the front of the shelf, is silk-screened with the designation of the card or cards that plug into it.

3. Apply the slot I.D. label supplied with the backplane to the front of the shelf, along the bottom card frame outer edge so that the black triangles line up with the card slots associated with that product as shown in *Figure 2-4*.
4. Install the plug-in card from the front of the shelf by sliding it into the card guides. Use both hands to seat the card firmly into the mating connectors on the backplane.
5. Tighten the backplane screws. Seating the backplane and its matching card before tightening the mounting screws ensures perfect alignment of the cards in the card guides and the mating connectors on the backplane. This makes it easier to remove the cards.
6. Plug the four-pin cable into the connector that is visible through the cutout in the upper corner of that particular panel. These connectors are keyed to ensure they can only go in the right way. *See Figure 2-5, below*. On the KILOMUX product there are (2) four-pin cables, which should be plugged into the connector located directly above the cable.

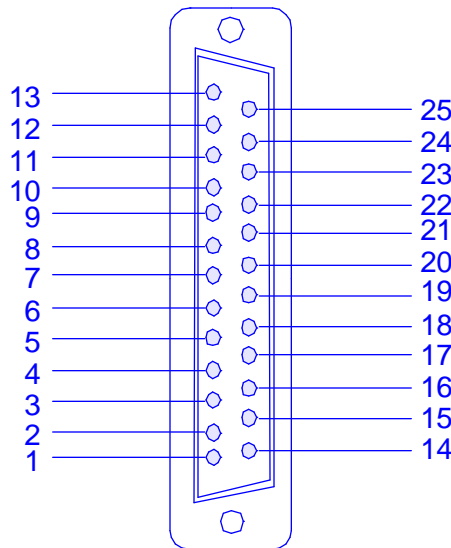


Figure 2-5 Connector J1 - J4 Pin Configuration (USS-2-DC/Business Equipment)

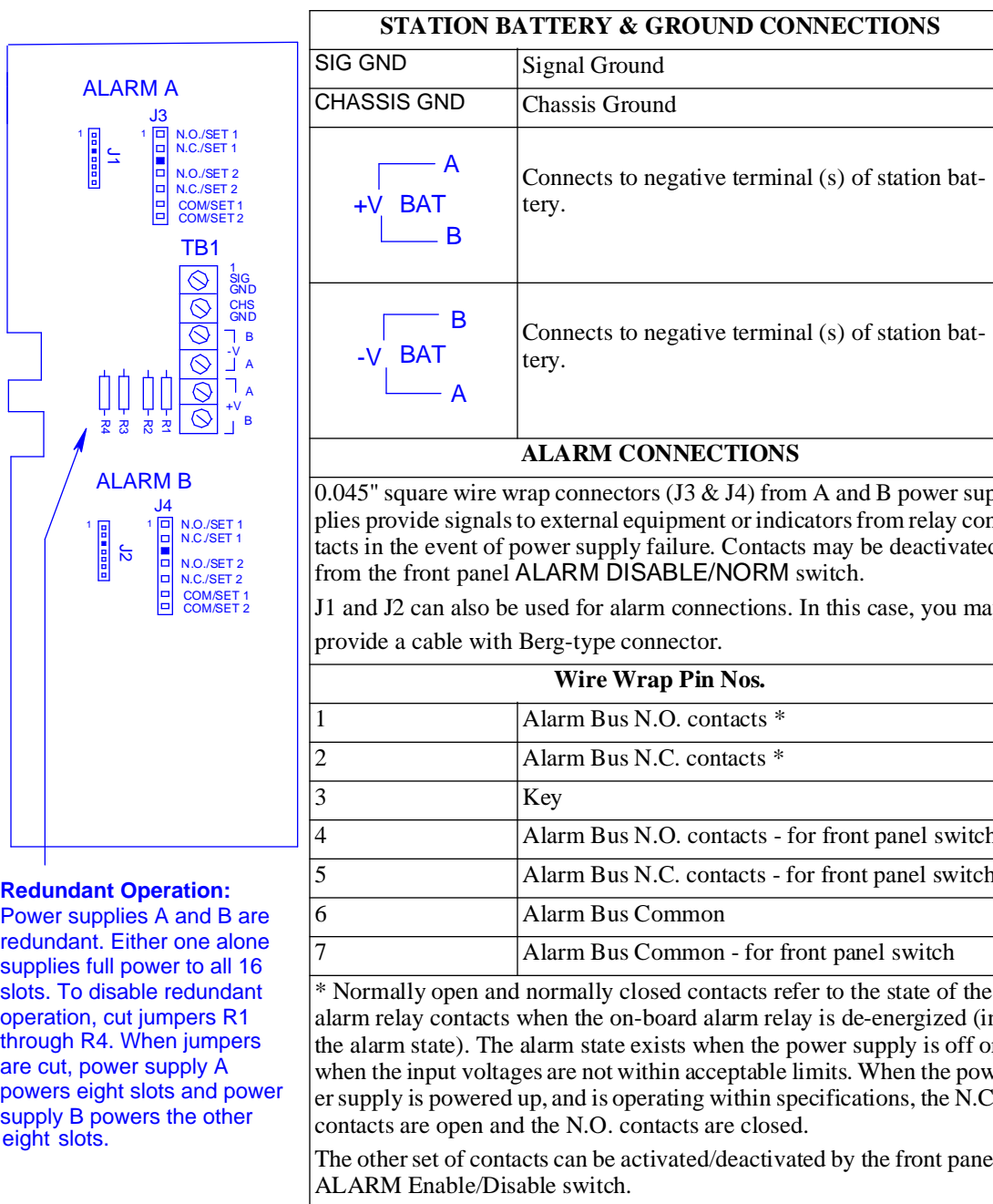
Plug-In Power Supply Module Installation (USS-2-DC)

Power supply modules plug in from the front of the shelf. The top slot in the power supply compartment is the A position. The bottom slot is the B position.

Using both hands, slide modules into the guides and seat them firmly. To remove a module, grip the gray knob on the front panel and pull out.

Primary Power Connection (USS-2-DC)

Connect the -48 volt station battery leads to the A + V BAT and -V BAT screw terminals on the power supply harness card (observe polarity) when the power supply is installed in the bottom slot. If two power supply modules and two batteries are used, connect one battery to the A screw terminals and the other battery to the B screw terminals. *See Figure 2-6*.



Redundant Operation:
Power supplies A and B are redundant. Either one alone supplies full power to all 16 slots. To disable redundant operation, cut jumpers R1 through R4. When jumpers are cut, power supply A powers eight slots and power supply B powers the other eight slots.

Figure 2-6 48 VDC Station Battery Connection Diagram (USS-2-DC)

Power supplies A and B are redundant. Either one alone supplies full power to all 16 slots. To disable redundant operation, cut Jumpers X1 through X4 (See Figure 2-6). When jumpers are cut, Power Supply A powers eight slots and Power Supply B powers the other eight slots.

External alarm conditions, if used, connect to the 7-pin A and B ALARM headers associated with each supply.

The power supply TB terminal also provides a signal ground (SIG GND) and frame ground (FR GND) connection to the external equipment or grounds (See Figure 2-6).

The various plug-in cards may be installed or removed in the powered-up shelf at any time without damage to the cards or shelf.

Backplane Cables (USS-2-DC)

Different combinations may be used in the USS-2-DC shelf. *Figure 2-4* illustrates a typical USS-2-DC shelf arrangement. *Tables 2-7 through 2-15* describe the cables for connecting current backplane products.

Daisy Chaining Backplanes (USS-2-DC)

The ENMACS 2N and the PMC backplanes may be daisy chained to each other (or to themselves) using a ribbon cable. *See Figure 2-7*. The daisy chain connects to the 485 bus connections of the backplanes.

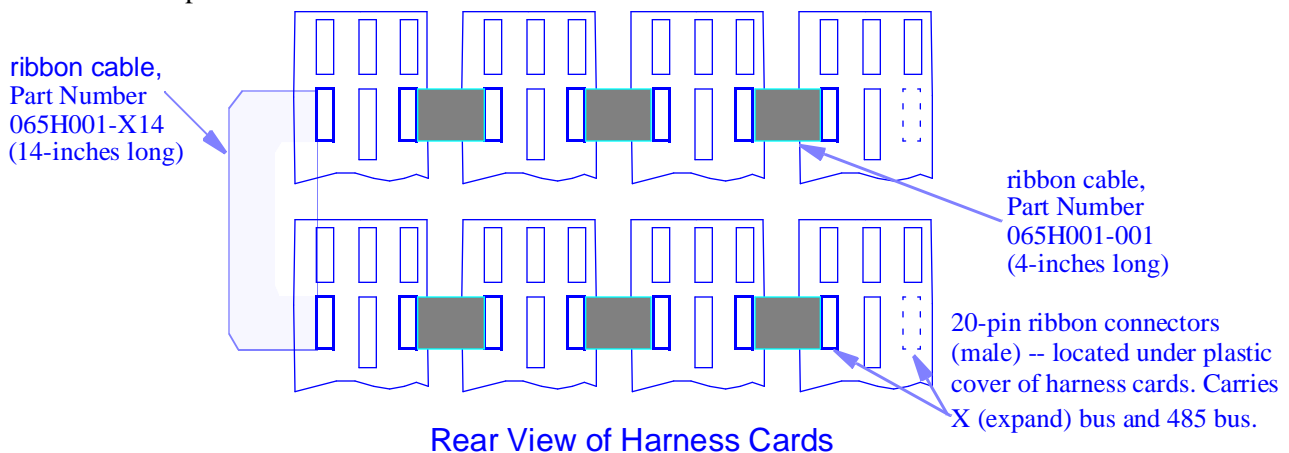


Figure 2-7 Daisy Chaining Harness Cards for the USS-2-DC Shelf

Table 2-7 Cables (USS-2-DC) Used for MAU-1A/BP

Description of Cables	GDC Part No.
MAU-1A Aggregate to MAU-1A Channel	830-040-002 or 028H502-xxx
MAU-1A Aggregate to Customer DCE	028H502-xxx
MAU-1A Aggregate to Customer DTE	028H502-xxx
MAU-1A Aggregate to DC Modem	830-040-002 or 028H502-xxx
MAU-1A Aggregate to Multiport Channel	830-040-002 or 028H502-xxx
MAU-1A Aggregate to 1261 Channel	830-040-002 or 028H502-xxx
MAU-1A Channel to Customer DCE	028H502-xxx
MAU-1A Channel to Customer DTE	028H502-xxx
MAU-1A Channel to DC Modem	028H502-xxx
MAU-1A Channel to 1261 Channel	028H311-xxx

Refer to Manual #044R103-000 for more information about the MAU-1A.

Table 2-8 Cables (USS-2-DC) Used for DataComm/NMS Modems (DC-1/BP, DC-2/BP)

Description of Cables	GDC Part No.
Modem VF to Private Line (JMB)	024H122-xxx
Modem VF to Private Line (42A or 66E3)	023H101-020
Dial Line (Programmable) to Switched Network	830-028-814
Dial Line (Permissive) to Switched Network	830-027-414
To MAU-1A Aggregate	830-040-002 or 028H502-xxx
To 1261 Aggregate	028H402-xxx
To 1291 Channel	028H311-xxx
To 1291 Aggregate	830-040-002 or 028H502-xxx
To Customer DTE	028H502-xxx
To Multiport Channel	028H311-xxx
Interface Adapter Card (058P039-001) Cables	
Master NIC to NMS Master (J1)	358H055-xxx
Master Through Mux to NMS Master (J1)	028H314-xxx
Daisy-Chain Master (J1) to NMS Master (J2)	358H056-006 or 058H002-xxx
Daisy-Chain Master (J1) to NMS Remote (J1)	058H001-005
<i>Refer to Manual #010R341 for more information about the DC-1 and DC-2.</i>	

Table 2-9 Cables (USS-2-DC) Used for 1261 GEN*NET (GEN*NET 1261/BP)

Description of Cables	GDC Part No.
DC Modem to 1261 Aggregate (232)	028H502-xxx
1261 (232) Aggregate to Customer DCE	028H502-xxx
1261 (232) Aggregate to 1291 Channel	028H402-xxx
1261 (232) Aggregate to Multiport Channel	028H402-xxx
1261 (232) Channel to DC Modem	028H311-xxx
1261 (232) Channel to Customer DTE	028H502-xxx
1261 (232) Channel to Customer DCE	028H502-xxx
1261 (232) Channel to MAU-1A Channel	830-040-002 or 028H502-xxx
1261 (232) Channel to MAU-1A Aggregate	830-040-002 or 028H502-xxx for length > 10 inches
<i>Refer to Manual #065R303 for more information about the 1261 GEN*NET.</i>	

Table 2-10 Cables (USS-2-DC) Used for 1291 KILOMUX (KILOMUX 1291/BP)

Description of Cables	GDC Part No.
DC Modem to 1291 (232) Aggregate	028H502-xxx
Customer DCE (232) to 1291 (232) Aggregate	028H502-xxx
Customer DCE (422) to 1291 (422) Aggregate	027H501-xxx Adapter and 027H603
Customer DCE (V.35) to 1291 (V.35) Aggregate	027H528-xxx
1291 Channel (232) to MAU-1A	830-040-002 or 028H502-xxx

Table 2-10 Cables (USS-2-DC) Used for 1291 KILOMUX (KILOMUX 1291/BP)

1291 Channel (232) to DC Modem	028H311-xxx
1291 Channel (232) to Customer DCE	028H311-xxx
1291 Channel (232) to Customer DTE	028H502-xxx
1291 Channel (232) to 1261 Aggregate	028H502-xxx
1291 Channel (232) to 1291 Channel	028H311-xxx
1291 Channel (232) to Multiport	028H311-xxx
1291 Supervisor Port to Customer DCE	028H502-xxx
1291 Supervisor Port to Customer DTE	028H311-xxx
1291 Supervisor Port to DC Modem	028H502-xxx
1291 Supervisor Port to NETCON	022H002-xxx
<i>Refer to Manual #081R391-000 for more information about the KILOMUX 1291.</i>	

Table 2-11 Cables (USS-2-DC) Used for INIC

Description of Cables	GDC Part No.
<i>Refer to Manual #058R30-000 for more information about the INIC.</i>	

Table 2-12 Cables (USS-2-DC) Used for KM-4

Description of Cables	GDC Part No.
<i>Refer to Manual #081R391-000 for more information about the KM-4.</i>	

Table 2-13 Cables (USS-2-DC) Used for PMC

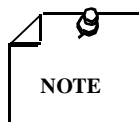
Description of Cables	GDC Part No.
<i>Refer to Manual #048R139-000 for more information about the PMC.</i>	

Table 2-14 Cables (USS-2-DC) Used for DC-3N

Description of Cables	GDC Part No.
NEBS Compliant Cables	
Business Equipment Port Cable (DB25F to DB25MLP) *	029H511-xxx
Business Equipment Port Cable (V.35F to DB25MLP) *	029H512-xxx
Auxiliary Port Cable (DB25M to DB25FLP) **	028H520-xxx
Optional Cables	
Modem VF to Private Line (42A or 66E3)	TBD
To Customer DTE	028H502-xxx
To 1291 Channel (DB25M to DB25M)	028H311-xxx
To 1291 Aggregate (DB25M to DB25M)	028H502-xxx
To Multiport Channel (DB25M to DB25M)	028H311-xxx

Table 2-14 Cables (USS-2-DC) Used for DC-3N

Interface Adapter Card (058P039-001) Cables	
Master NIC to NMS Master (J1)	358H055-xxx
Master Through Mux to NMS Master (J1)	028H314-xxx
Daisy-Chain Master (J1) to NMS Master (J2)	358H056-006 or 058H002-xxx
Daisy-Chain Master (J1) to NMS Remote (J1)	058H001-005
* MLP = Male Low Profile Connector (NEBS) Required Cables	
** FLP = Female Low Profile Connector (NEBS) Required Cables	



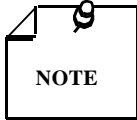
Different types of cables are required to interconnect a system. To be NEBS compliant, adaptor cables as noted are required followed by the selection of additional DTE or DCE cables. For NON-NEBS requirements, use the DC-1/BP or select from Optional Cables.

Table 2-15 Cables (USS-2-DC) Used for ENMACS-2N

Description of Cables	GDC Part No.
NEBS Compliant Cables	
Business Equipment/COMM Link Port Cable (DB25F to DB25FLP) **	028H519-xxx
Business Equipment/COMM Link Port Cable (V.35F to DB25FLP) **	029H513-xxx
Auxiliary Port Cable (DB25M to DB25FLP) **	028H520-xxx
DSX Ports Cable used with SMDS 100. Refer to SMDS Manual 048R230-000	025H102-xxx
Front Panel Supervisory cables.	
You must select one of the two following Front Panel Supervisory cables. They are not included. (DMA-200)	
VT100 Cable (DB25F to Jack)	024H139-006
PC Cable (DB9F to Jack)	024H130-006
SNMP Interface cables.	
You must select one of the five following interface cables. They are not included.	
PPP Serial Port Cable (DB25F to DB9F)	027H223-025
Ethernet-to-SNMP Port AUI Female-to-Female DB15 to DB25	027H613-005
Ethernet-to-SNMP Port 10Base-T RJ-to-RJ Cable	830-028-814
Ethernet-to-SNMP Port 10Base-T DB25-to-RJ Adaptor	058H029-001
Token-Ring-to-SNMP Port STP Female-to-Female IBM to DB25	027H104-008
Token-Ring-to-SNMP Port UTP RJ-to-RJ Cable	830-028-814
Token-Ring-to-SNMP Port UTP DB25-to-RJ Adaptor	058H032-X14

Table 2-15 Cables (USS-2-DC) Used for ENMACS-2N

Optional Cables	
BUSS Cable for Connection between Backplanes	065H001-001
BUSS Cable for Connection between Shelves	065H001-001
P Port-to-S Port DTE/DCE RJ-to-RJ Cable	830-028-814
P Port-to-S Port DTE/DCE DB25 to RJ Adaptor	058H030-001
Multiplexer-to-P Port DCE/DTE Male-to-Male DB25 to DB25	028H502-005
Modem-to-M Port DCE/DTE Male-to-Male DB25 to DB25	028H502-005
Multiplexer-to-S Port DTE/DCE RJ-to-RJ Cable	830-028-814
Multiplexer-to-S Port DTE/DCE DB25-to-RJ Adaptor	058H031-001
* MLP = Male Low Profile Connector (NEBS Required Cables) ** FLP = Female Low Profile Connector (NEBS Required Cables) Refer to Manuals #058R692-000 and 048R165-000 for more information about the ENMACS-2N	



Different types of cables are required to interconnect a system. To be NEBS compliant, adapter cables as noted are required followed by the selection of additional DTE or DCE cables. For NON-NEBS requirements, use the PMC/BP.

Pin designations are covered next for the USS-2-DC shelves.

Pin Designations for the USS-2-DC Shelf

Table 2-16 Pin Designations for ENMACS Backplane (USS-2-DC)

P1 (To DTE) DB-25*	P1 (To DTE) V.35**	P2 (To DTE) EN- MACS 2N/BP	RS232	V.35	530
1	A	13		RCV CLK a (DD)	CTS b (CB)
2	P	12		EXT CLK a (DA)	TX CLK b (DB)
3	R	11	DL to REMOTE (DD)	DL to REMOTE (DD)	EXT CLK b (DA)
4	C	10			DCD b (CF)
5	D	9			RCV CLK b (DD)
6	E	8	DCD (CF)	DCD (a) (CF)	DCD a (CF)
7	B	7	SIG GND (AB)	SIG GND (AB)	SIG GND (AB)
8	F	6	DSR (CC)	DSR (a) (CC)	DSR a (CC)
9	N/C	5	CTS (CB)	CTS (a) (CB)	CTS (a) (CB)
10	N/C	4	RTS (CA)	RTS (a) (CA)	RTS a (CA)
11	N/C	3	RCV DATA (BB)	RCV DATA (a) (BB)	RCV DATA a (BB)
12	U	2	SEND DATA (BA)	SEND DATA (a) (BA)	SEND DATA a (BA)
13	V	1	FRAME GND (AA)	FRAME GND (AA)	FRAME GND (AA)
14		25	TEST MODE (TM)	TEST MODE (TM)	TEST MODE (TM)
15	a	24	EXT CLK (DA)	EXT CLK b (DA)	EXT CLK a (DA)
16	T	23			DTR b (CD)

Table 2-16 Pin Designations for ENMACS Backplane (USS-2-DC)

17	X	22			DSR b (CC)
18	L	21	RDL (RL)	RDL (RL)	RDL (RL)
19	Y	20	DTR (CD)	DTR (a) (CD)	DTR a (CD)
20		19		TX CLK a (DB)	RTS (b) (CA)
21	b	18	LOCAL LOOP (LL)	LOCAL LOOP (LL)	LOCAL LOOP (LL)
22	N/C	17	RCV CLK (DD)	RCV CLK (b) (DD)	RCV CLK a (DD)
23	N/C	16		RCV DATA b (BB)	RCV DATA b (BB)
24	W	15	TX CLK (DA)	TX CLK b (DB)	TX CLK a (DB)
25	K	14		SEND DATA (b) (BA)	SEND DATA b (BA)

* Reference Cable #029H513

** Reference Cable #028H519

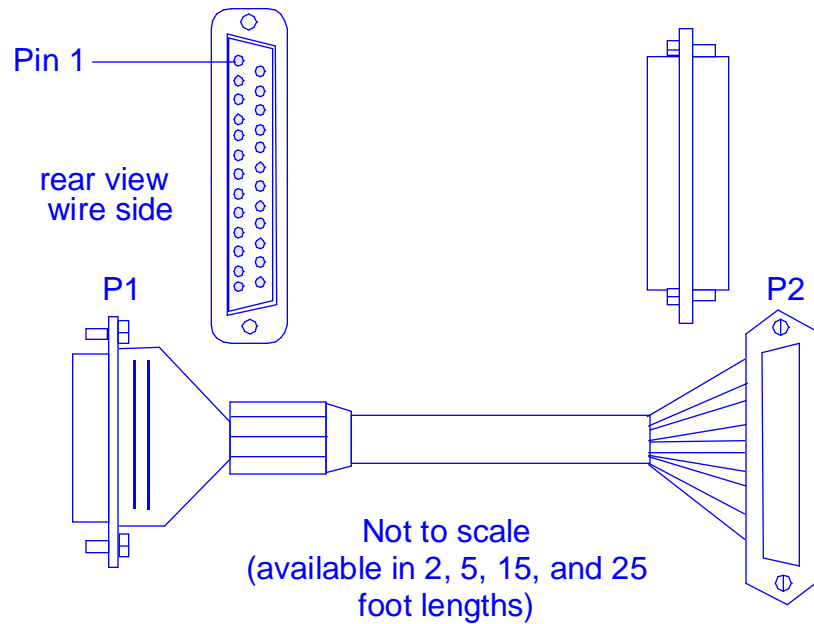
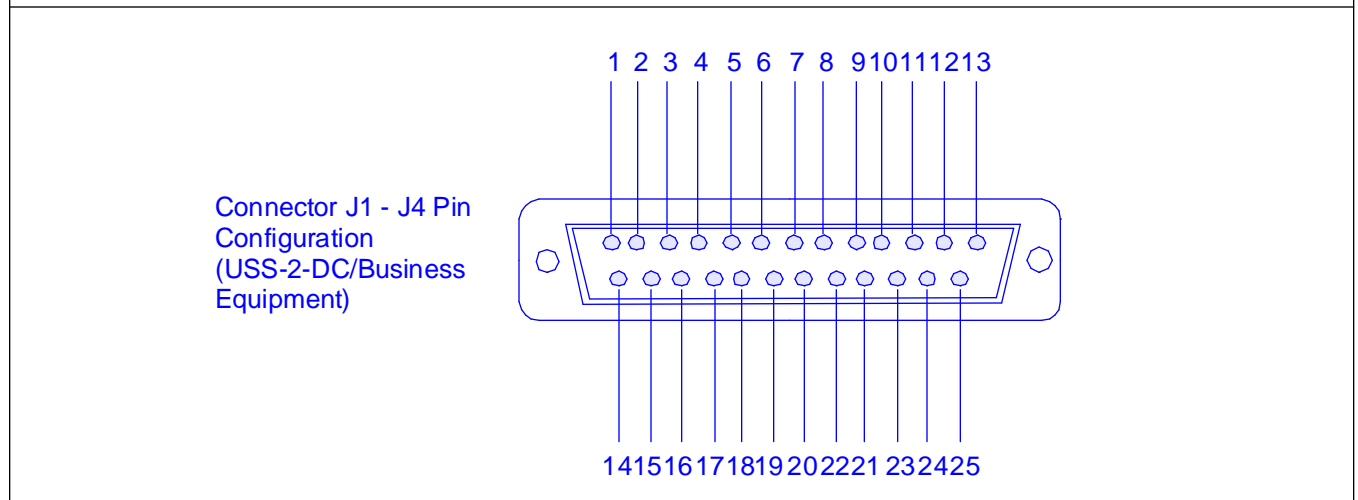


Figure 2-8 Cable No. 028H520-xxx (USS-2-DC)

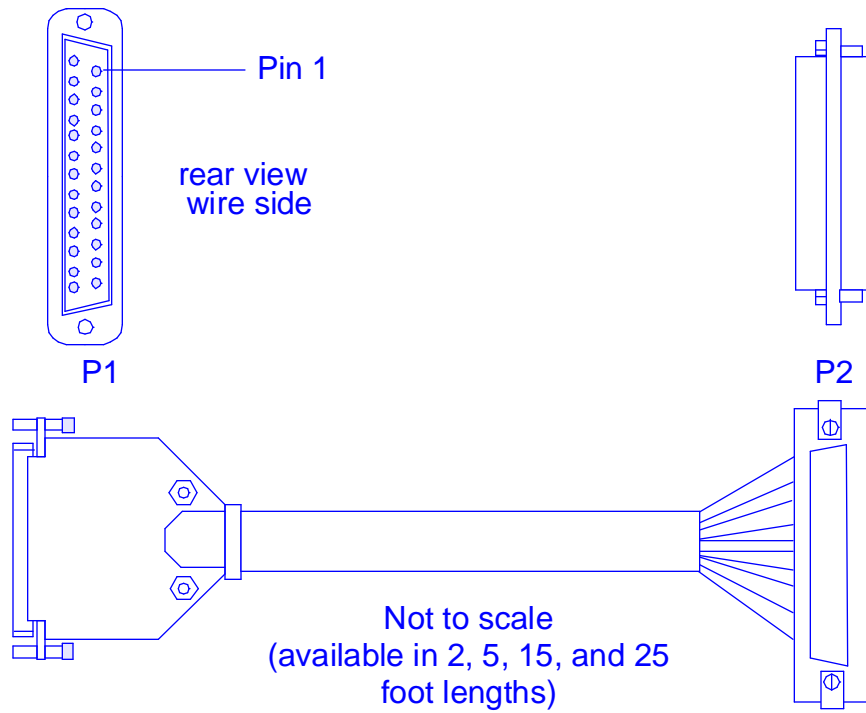


Figure 2-9 Cable No. 029H511-xxx (USS-2-DC)

Table 2-17 Cable No. 029H511-xxx (USS-2-DC) Pin Designations

Cable Assembly #029H511-xxx		
P1	Color	P2
1	BRN	1
14	RED	14
2	ORN	2
15	YEL	15
3	GRN	3
16	BLU	16
4	VIO	4
17	GRY	17
5	WHT	5
18	BLK	18
6	BRN	6
19	RED	19
7	ORN	7
20	YEL	20
8	GRN	8
21	BLU	21
9	VIO	9
22	GRY	22
10	WHT	10
23	BLK	23

Table 2-17 Cable No. 029H511-xxx (USS-2-DC) Pin Designations

11	BRN	11
24	RED	24
12	ORN	12
25	YEL	25
13	GRN	13

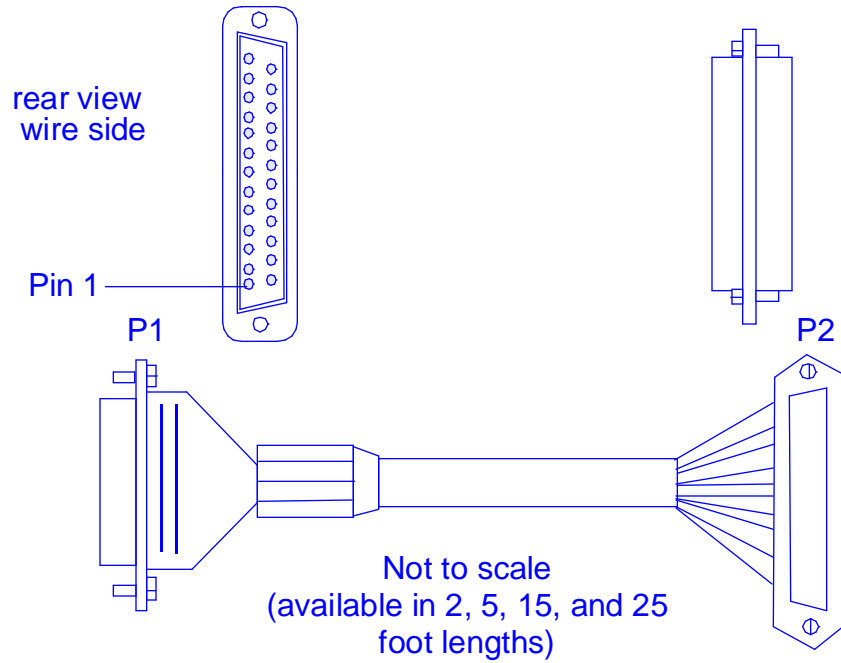


Figure 2-10 Cable No. 028H519-xxx (USS-2-DC)

Table 2-18 Cable No. 028H519-xxx (USS-2-DC) Pin Designations

Cable Assembly #028H519-xxx		
P1	Color	P2
13	BRN	1
12	RED	2
11	ORN	3
10	YEL	4
9	GRN	5
8	BLU	6
7	VIO	7
6	GRY	8
5	WHT	9
4	BLK	10
3	BRN	11
2	RED	12

Table 2-18 Cable No. 028H519-xxx (USS-2-DC) Pin Designations

1	ORN	13
25	YEL	14
24	GRN	15
23	BLU	16
22	VIO	17
21	GRY	18
20	WHT	19
19	BLK	20
18	BRN	21
17	RED	22
16	ORN	23
15	YEL	24
14	GRN	25

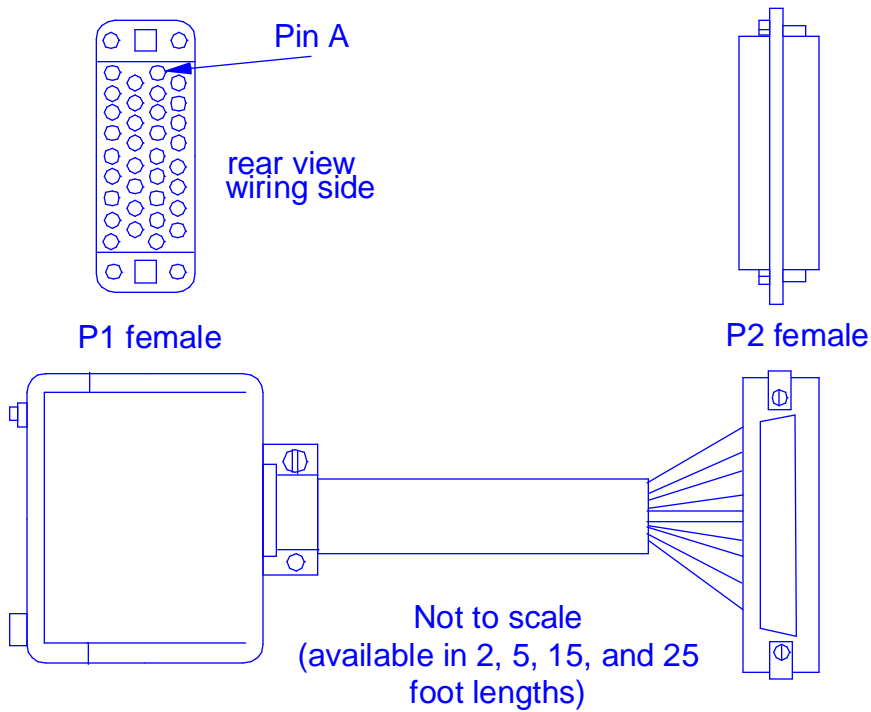


Figure 2-11 Cable No. 029H513-xxx (USS-2-DC)

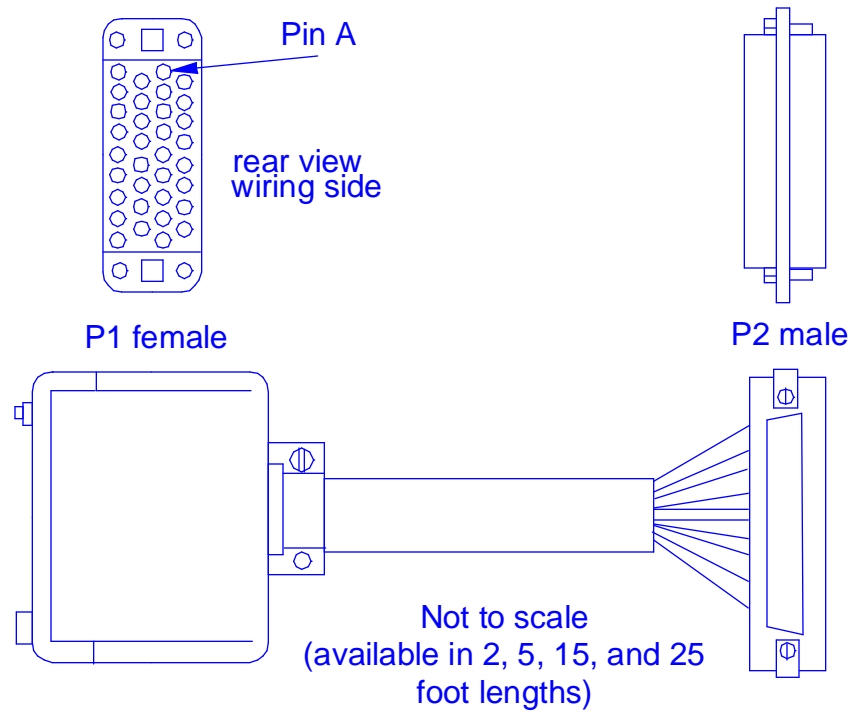


Figure 2-12 Cable No. 029H512-xxx (USS-2-DC)

Repair and Spare Parts for the GDC USS-1-AC Shelf

This section gives you the repair parts and spare parts for the GDC USS-1 Universal System Shelf. Tables 2-19 and 2-20 list the replaceable USS-1 parts (except commonly available hardware) by GDC part number, description, and reference designation, if any.

Table 2-19 USS-1-AC Universal System Shelf Assembly

GDC Part No.	Description
010B080-001	USS-1-D shelf assembly, 117 V ac
010B080-002	USS-1-E shelf assembly, 220 V ac
010B080-003	USS-1-J shelf assembly, 100 V ac
010B080-004	USS-1-U shelf assembly, 240 V ac
010C040-001	Blank filler card
010D360-001	19 to 23-inch adapter ears (2 required)
101D401-001	Blank rear panel, 1/8 (2 slot)
010D402-001	Blank rear panel, 1.4 (4 slot)
010J011-001, -002, -003	Center of gravity mounting installation (2 required)
010H006-001	Harness assembly, ac

Table 2-20 USS-1 -AC Rackmounting Kit*

GDC Part No.	Description
—	DC-1 domestic modem kit
—	DC-2 international modem kit
044M011-001	MAU-1A kit
044M012-001	MAU-2 kit
044M013-001	MAU-3 kit
065M010-001	GEN*NET 1261 4-channel kit
081M002-001	KILOMUX 1281 4-channel kit
081M002-002	KILOMUX 1281 6-channel international kit
* Rackmounting kit includes the associated product base card and backplane assembly. The backplane assembly includes the harness card, harness card cover, rear panel, and slot-identification labels.	

Diagrams and Schematics for the GDC USS-1-AC Shelf

(Printed Version Only)

The last section of the manual contains mechanical, component board wiring, and schematic drawings for reference by service personnel and to aid in isolating causes of malfunctions within the USS-1-AC Shelf. See *Diagrams and/or Figures 2-13 through 2-20*, below.

Diagrams

(Printed Version Only)

This electronic manual does not have a diagram section. To reference diagrams please order manual *010R313-000 Universal System Shelf, (Issue 4, May 1997)*. Diagrams can be found in *Chapter 2, pages 2-25 through 2-32*.

Page	Figure Number	Description
2-25	2-13	Wiring Diagram, USS-1-AC Shelf 117 V AC (010W038-001)
2-26	2-14	Wiring Diagram, USS-1-AC Shelf 100 V AC International (010W038-003)
2-27	2-15	Wiring Diagram, USS-1-AC Shelf 220/240 V AC International (010W038-002, -004)
2-28	2-16	Power Supply Assembly, 117 V AC (010B094-00), USS-1-AC Shelf
2-29	2-17	Power Supply Assembly, International (010B095-002 through -004), USS-1-AC
2-30	2-18	USS-1 Installation Drawing, 117 V AC (010B080-001), USS-1-AC
2-31	2-19	USS-1 Installation Drawing, International (010B080-002 through -004), USS-1-AC
2-32	2-20	Power Harness Assembly (010H006-001), USS-1-AC

3 Operation

Front Panel Switches, Indicators, and Test Points (USS-2-DC Only)

The DPS-9 power supply front panel for the USS-2-DC, shown in *Figure 3-1*, describes the use and function of the front panel switches, indicators and test points. For information on the individual modems mounted in the USS-2-DC, refer to the manuals supplied with each modem.

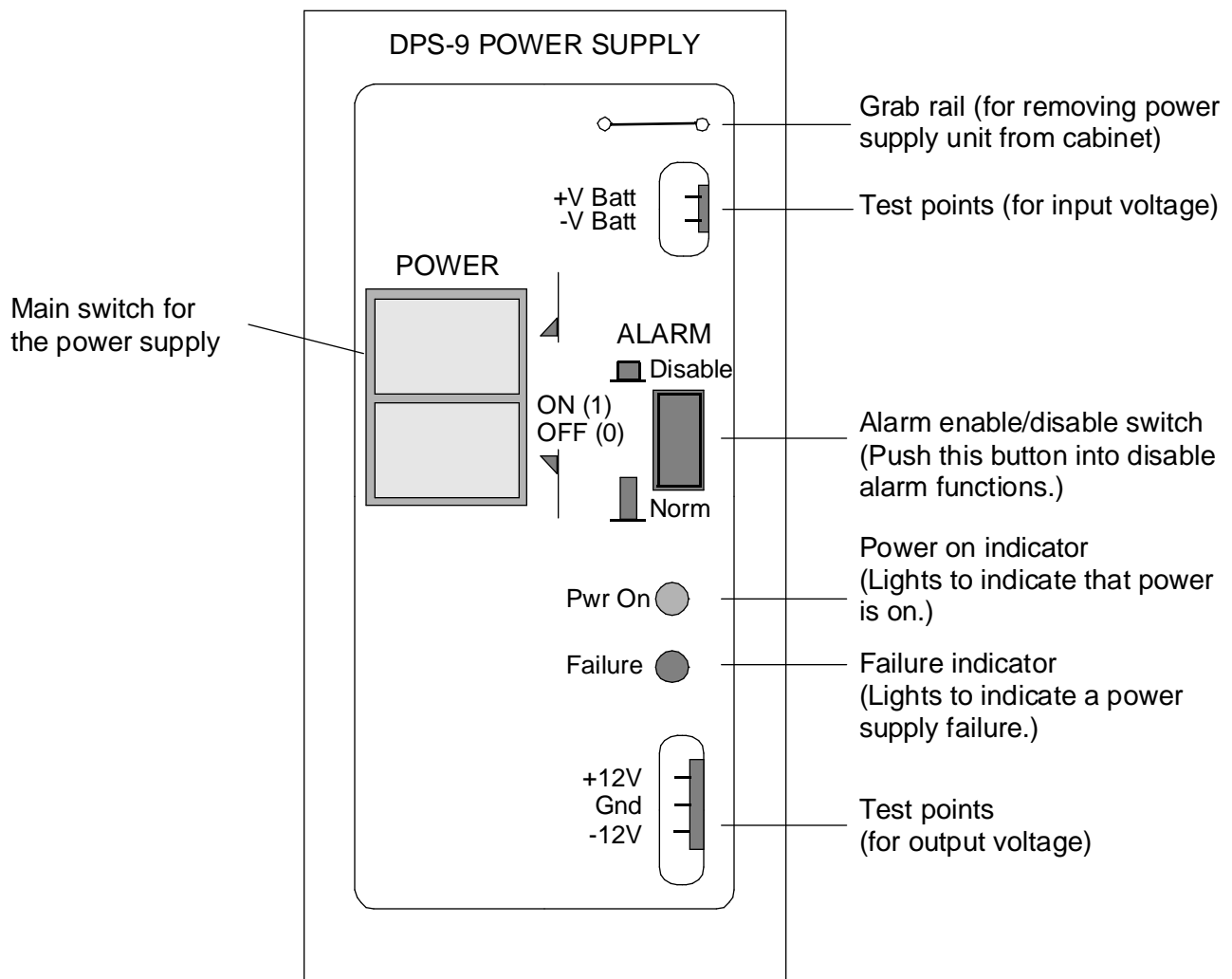
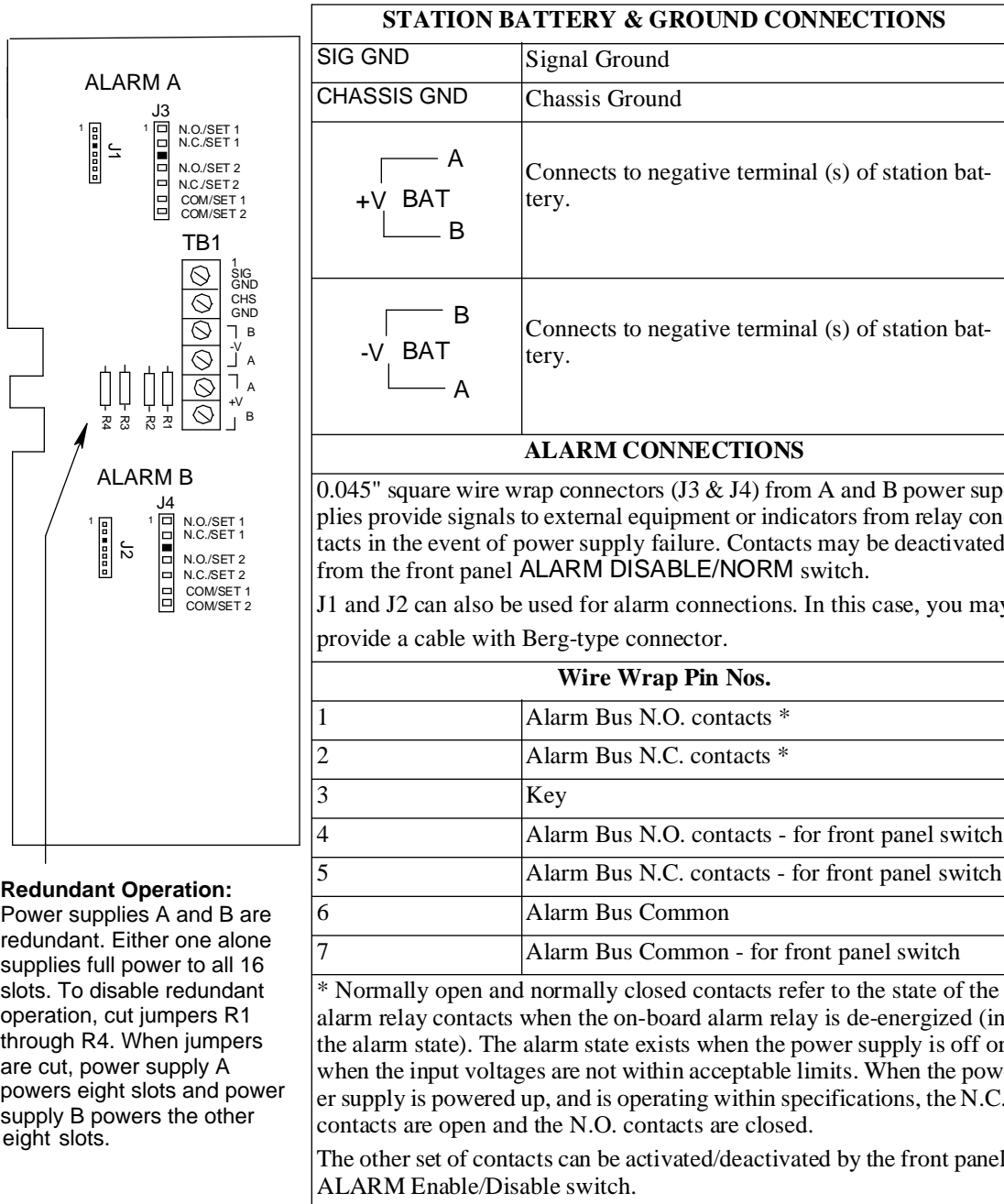


Figure 3-1 DPS-9 Power Supply Front Panel, USS-2-DC

Rear Panel Connectors (USS-2-DC)

The power supply rear panel battery (USS-2-DC) and alarm cable connectors are shown in Figure 3-2.



Redundant Operation:
Power supplies A and B are redundant. Either one alone supplies full power to all 16 slots. To disable redundant operation, cut jumpers R1 through R4. When jumpers are cut, power supply A powers eight slots and power supply B powers the other eight slots.

Figure 3-2 USS Power Supply Connector Harness Card, USS-2-DC

4 Maintenance

Fuse Replacement for the USS-1-AC and USS-2-DC Shelves

A burnt fuse could indicate a short circuit in the harness card, the power supply wiring, the transformer, or any one of the eight plug-in cards in the two quadrants associated with that fuse and LED indicator. When a fuse burns out, the associated power supply LED is extinguished.

If a fuse burns out, remove all eight plug-ins associated with that fuse and replace the fuse with an appropriate 3 AG slow-blow fuse (*See Table 4-1 below for USS-1-AC fuse data--specifically applicable to the USS-2-DC Shelf*). If it blows again with the plug-ins removed, the trouble is in the harness card on the backplane, low voltage ac wiring, transformer, or the fuse-to-transformer wiring. If it remains intact and the LED stays lit, insert the plug-ins one at a time until the fuse blows again, indicating that the last plug-in installed was faulty. Replace the faulty plug-in. Do not attempt plug-in repair in the field.

All plug-in cards are fused. In the event of a fault on a single card, it is most likely that the fuses on the card will burn out before the main fuses in the shelf power supply.

Table 4-1 USS-1-AC Fuse Data

AC Panel Fuses	USS-1 Shelf Type	Shelf Part No.	Rating
F1, F2	USS-1-D Domestic 117 V	010B080-001	1.5 A SB
F1, F4	USS-1-E Int. 220 V	010B080-002	1.0 A SB
F1, F3	USS-1-J Int. 100 V	010B080-003	2.0 A SB
F1, F3 F2, F4	USS-1-U Int. 240 V	010B080-004	1.0 A SB Spare

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General DataComm