GDC 087R700-000
Issue 1, February 1997

Installation and Operation

UAS 7000

General DataComm

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 which is 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.

Warranty

General DataComm warrants that its equipment is free from defects in materials and workmanship. The warranty period is one year from the date of shipment. GDC's sole obligation under its warranty is limited to the repair or replacement of the defective equipment provided it is returned to GDC, transportation prepaid, within a reasonable period. This warranty will not extend to equipment subjected to accident, misuse, or alterations or repair not made by GDC or authorized by GDC in writing. *The foregoing warranty is exclusive and in lieu of all other warranties, express or implied, including but not limited to, warranties of merchantability and fitness for purpose.*

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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. The back panel of the component side of the UAS 7001 PCB provides the FCC Registration number for the unit. If requested, give this information to the telephone company.

The telephone company may discontinue your service temporarily if the unit causes harm to the telephone network. If possible, you will be notified of such action 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 will notify you in writing. 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.

To connect the UAS 7001 to the public telephone network you are required to give the following information to the Telephone Company:

FCC Registration Number TBD

Registration Status	Port ID	SOC	FIC	USOC
Original	T1	6.0Y	04DU9-BN	RJ48C
			04DU9-DN	
			04DU9-1KN	
			04DU9-1SN	
Modification	T1	6.0Y	04DU9-BN	RJ48C
			04DU9-DN	
			04DU9-1KN	
			04DU9-1SN	

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.

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.

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 that 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 no 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 of an interface may consists of any combination of devices subject only to the requirement of 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, auβer die Dose entspricht den Vorschriften für Feuchträume. Berühren Sie unisolierte Telefonleitungen oder Einrichtungen nicht, auβer 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.

Service and Support

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 Corporation (GDSC) between 8am and 8 pm east coast time.

- 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 and the next available support representative will promptly return your call.

Hands-on training courses are provided by GDSC 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. Call 1-800-242-1030 and follow the menu instructions to discuss educational services or to receive a course schedule.

This equipment is to be installed only in restricted access areas (dedicated equipment rooms, equipment closets or the like) in

accordance with articles 110-16, 110-17 and 110-18 of the National Electrical Code, ANSI/NFPA 70.

Use only with International Power Sources, Inc. Model PUP 114A.

DC Connection

DC requirements are a customer-provided station battery source: Field connections shall be made to the terminal block TB2 via #16 to #14 AWG, insulated, # 6 stud, double-crimp ring lugs, manufactured by Molex P/N BB 823-06T or equivalent.

For single battery sources:

1. Connect the positive side of the battery to terminal + BATT.
2. Connect the negative side of the battery to terminal -BATT.

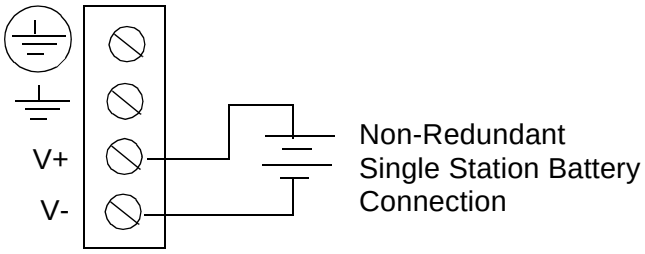

Table of Contents

Preface

Scope

This manual describes how to install and operate a General DataComm UAS 7000. It is written for installers and operators and assumes a working knowledge of data communications. Refer to *Related Publications* on the next page.

How to Use This Manual

Each major UAS 7000 component has its own manual and is three-hole punched. This allows you to easily add subsequent 7000 product manuals and updates into a binder.

Organization of Chapters

This manual has four separate chapters:

- Chapter 1 - System Description introduces important concepts, and features of the UAS 7000.
- Chapter 2 - Shelf/Enclosure describes the SpectraComm/UAS Shelf and Enclosure pertaining to the use of the UAS 7000. Detailed information on the use of the shelf and enclosure and the optional Alarm card can be found in its own manual listed in the Related Publications section of this preface.
- Chapter 3 -Network Interface Units describes the various NIUs.
- Chapter 4 -Drop-Side Interface Units describes the various DIUs.
- Chapter 5 -Network Management describes TEAM 7000 for PC or TEAM 7000 for UNIX.

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.

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This typewriter font shows output that is displayed on the screen.
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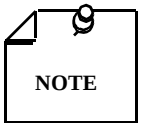
This bold font shows specific input that you type at the keyboard.

This bold italicized font shows variable input that you type at the keyboard.



Notes present special instructions, helpful hints or general rules.

Related Publications

The following documents have additional information that may be helpful when using this product:

- *Installation and Operation SpectraComm/UAS Shelf and Enclosure* *GDC 010R302-000*
- *Operating and Installation Instructions SpectraComm Manager Card* *GDC 048R303-000*
- *Operating and Installation Instructions DataComm 610/612* *GDC 072R114-000*
- *Operating and Installation Instructions DataComm 621* *GDC 072R118-000*
- *Operation TEAM 7000 for PC* *GDC 087R704-000*
- *Operation TEAM 7000 for UNIX* *GDC 087R705-V100*

GDC publication numbers (e.g., GDC 087R700-000) 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 7000)

R	denotes a technical publication
nnn	a number assigned by Technical Publications
000	identifies a hardware product and does not change
Vnnn	the software version associated with a product may be updated periodically

The Issue Number on the title page only changes 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.

Glossary of Abbreviations

2B1Q

2 Binary 1 Quaternary line code used for Basic Rate ISDN and HDSL.

AIS

Alarm Indication Signal

Agent

A device or process running on a device or computer that responds to SNMP requests and sends SNMP Traps.

BBE

Background Block Error

BPS

Bits Per Second

CDU

Channel Distribution Unit

CO

Central Office

D&I

Drop-and-Insert

DTE

Data Terminal Equipment

DEG

Degraded minute

DIU

Drop side Interface Unit

DS0

Digital service 0, a 64 kbps channel

E1

Digital Transmission Standard at 2.048 Mbit

EOC

Embedded Operations Channel

ES

Errored second

ESF

Extended Superframe Format

ESS

Electronic Switching System

FCC

Federal Communications Commission

FXO

Foreign Exchange Office

FXS

Foreign Exchange Suscriber

GUI

Graphical User Interface

HDB3

High density bipolar of order 3 (Line Code for E1)

HDSL

High-bit-rate Digital Suscriber Line

HP OpenView PC

A Microsoft Windows based user interface for managing network applications and devices.

ISDN

Integrated Synchronous Digital Network

ITU

International Telecommunication Union

LDU

Line Distribution Unit

LIU

Line Interface Unit

LTU

Line Terminating Unit

MAP

A named collection of objects and their associated topology.

MIB

Management Information Base. The collection of object definitions that can be accessed through a network management protocol.

NIU

Network Interface Unit

SCM

SpectraComm Manager

SES

Severely Errored Second

SNMP

Simple Network Management Protocol

UAS

UnAvailable Second or Universal Access System (GDC proprietary trade name)

INSERT TAB # 1 HERE

System Description

Overview

This chapter describes the components that make up the UAS (Universal Access System) 7000. Key features, a description, typical applications, and an equipment list are provided.

Description

The UAS 7000 system may be used in conjunction with GDC's Universal Access System (UAS) data set components or any standards-based equipment located on the customer premises across the subscriber loop. When fully populated, the UAS 7000 can interface up to 4 wideband (E1 or T1) network facilities bearing standard network services multiplexed into 64K time-slots. These can be standard private line (voice and data), and/or fractional data services that are combined by standard-based equipment multiplexer equipment. The UAS 7000 system cross-connects telephone company network-side services to drop-side interfaces of customer premise equipment (CPE) on the local subscriber loop.

Features

NIU 7001/7002

Each NIU (Network Interface Unit) supports a single T1 (7001) or E1 (7002) line. One unit occupies a single slot in the shelf (or enclosure) in either a single or dual shelf arrangement. The T1 interface supports SF or ESF framing and B8ZS or optional AMI line coding. The E1 interface supports Basic or CRC-4 multiframe and HDB3 or optional AMI line coding.

You can configure the 7001 or the 7002 to the communications network. Features are:

- provides interface to T1 or E1 or Fractional T1/E1 services.
- 7001 is either short haul (DSX/Central Office) or long haul DS1/CPE interface. 7002 is short haul.
- may be mixed or matched with other GDC UAS Data Sets.
- Network Managed through SCM SNMP interface.
- up to 31 cards in SCM managed shelf.

DIU 7616

The DIU (Drop-Side Interface Unit) 7616 interfaces between the 2B1Q network and the shelf backplane, providing up to three metallic loops. It consists of three two wire transmission units using 2B1Q (ISDN Basic Rate) for its line coding scheme. It supports up to six 64 kbps or three 128 kbps services. One unit occupies a single slot in the shelf (or enclosure) in either a single or dual shelf arrangement. Other features are:

- ITU I.430, ISDN Basic Rate, B1, and B2 loopback requirements per ITU I.603 compliant
- software controllable
- six 64 kbps or three 128 kbps channels
- front panel LED status of loops
- independent self-test pattern generators
- SNMP originated diagnostics

SCM Card

The SpectraComm Manager (SCM) card is used for management interface functions. TEAM 7000 for PC or UNIX uses SNMP (Simple Network Management Protocol) that allows you to perform configuration, maintenance, status, and other functions on the SCM, shelf cards, and associated remotes. The IP addressable SCM is an SNMP agent that proxies requests to the other cards in the shelf. Refer to *Operation TEAM 7000 for PC,* GDC Pub. No. 087R704-000, or *Operation TEAM 7000 for UNIX,* GDC Pub. No. 087R705-V100.

The SCM card is described in a separate GDC manual - *Installation and Operation SpectraComm Manager Card* GDC Pub. No. 048R303-000.

Alarm Card

This optional plug-in Alarm card, along with the existing shelf alarm bus and the associated product card(s), allows you to monitor and control alarm conditions. The card:

- Provides contacts to activate local and remote customer alarm systems.
- Provides local and remote indication of alarms in a system.
- Provides separate cutoff controls for local and remote systems.
- The alarm function is accomplished using the plug-in Alarm Card along with the existing enclosure or shelf alarm bus and the associated product cards.

Detailed information on the use of the optional Alarm card can found in the SpectraComm/UAS Shelf and Enclosure manual listed in *Related Publications* in the *Preface* of this manual.

SpectraComm/UAS Shelf and Enclosure

Features are - SpectraComm Shelf:

- cabinet or open frame mountable
- each shelf accepts one or two power supplies
- 16 module slots and 2 power supply slots per shelf
- multiple shelf expansion provides an extra 2 power supply slots and an extra 16 module slots

- Removable backplanes called connector panels which provide a diversity of products to be housed in the shelf
- plug-in power supply modules available in the following voltages:

  100/117 Vac (47-63 Hz)

  220/240 Vac (47-63 Hz)

  -48, and -60 Vdc (station battery) version

Features are - SpectraComm Multipak:

- low profile, compact design for desktop use
- packaging for 10 plug-in-modules
- separate rear connector zones for network and business equipment connections
- plug-in power supply modules available in the following voltages:

  100/120 Vac (47-63 Hz)

  220/240 Vac (47-63 Hz)

Zones

The rear panel of both the shelf and the enclosure is divided into three horizontal rows (or Zones). Zone 1 (located at the top) and Zone 3 (located at the bottom) accept a connector panel. Zone 1 is used for network interfaces, Zone 3 is used for business equipment, and Zone 2 is used for internal busses and power.

Detailed information on the use of the SpectraComm/UAS Shelf and enclosure and the optional Alarm card can found in *Installation and Operation SpectraComm/UAS Shelf and Enclosure* GDC Pub. No. 010R302-000.

Applications

Figure 1-1 shows a typical application for the UAS 7000.

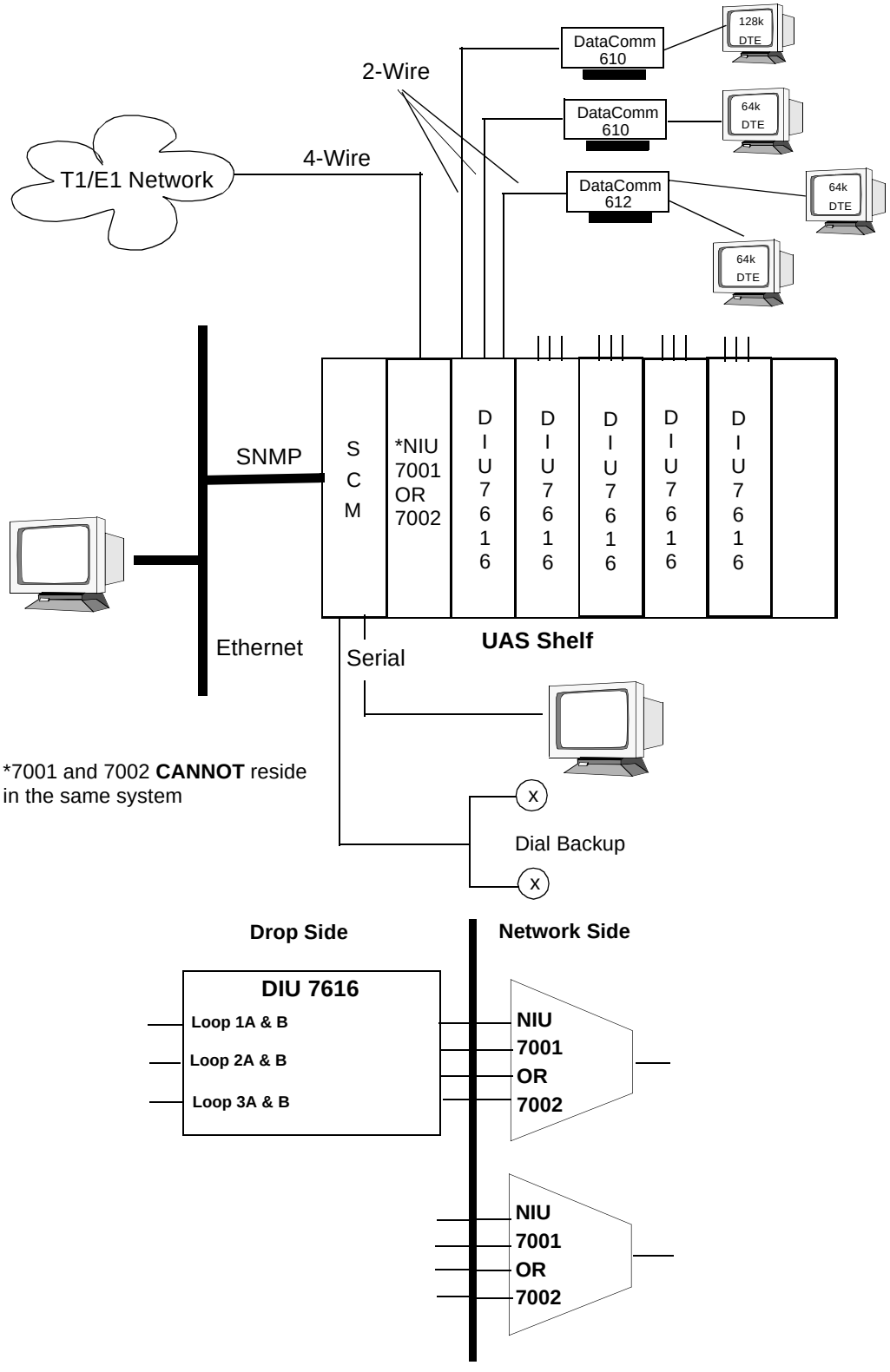


Figure 1-1 UAS 7000 Application

INSERT TAB # 2 HERE

GDC 087R701-000
Issue 1, February 1997

Installation and Operation

UAS 7000

Shelf / Enclosure

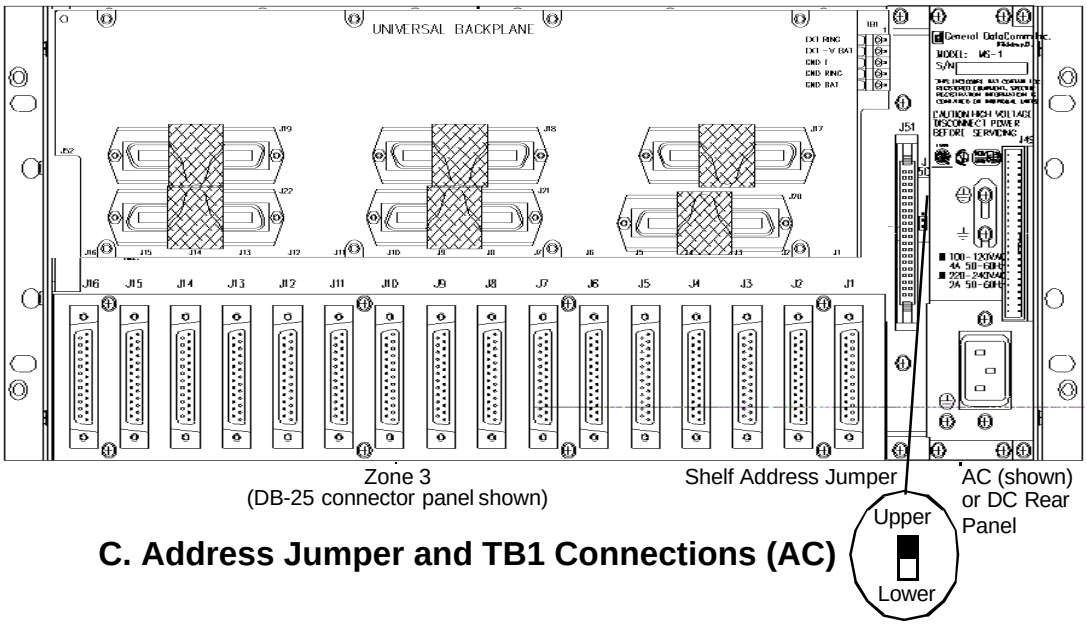
General DataComm

Errata Sheet
for
Installation and Operation
UAS 7000
Shelf/Enclosure
Publication 087R701-000, Issue 1

Overview

This publication reflects changes to the Installation and Operation manual for the UAS 7000 Shelf/Enclosure. Please make a note on the corresponding pages.

Page 1-5 "**Figure 1-3** Shelf Rear Panel (Sheet 2 of 2)":
S*how exploded view of J50 switch pointing to proper location at rear of shelf*:



C. Address Jumper and TB1 Connections (AC)

Page 1-6 Table 1-1 heading change:
Table heading 1-1 should read - "Modular Pin Assignments by Product Type"

Page 1-7 Table heading change:
Table heading 2-4 should read - "Universal Backplane Conversion Pin Assignments - by slot - (50-Pin Telco to 8-Pin Modular)"

June, 1997

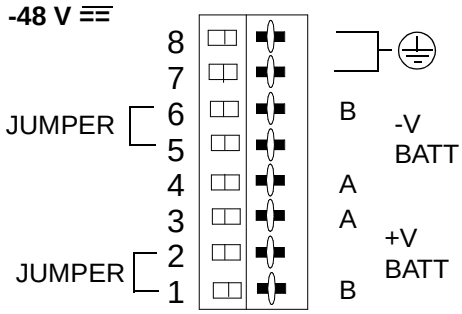
Errata Sheet
for
Installation and Operation
UAS 7000
Shelf/Enclosure

Publication 087R701-000, Issue 2

Overview

This publication reflects changes to the Installation and Operation manual for the UAS 7000 Shelf /Enclosure. Please make a note on the corresponding pages.

Page 1-6 **Figure 1-3 B. DC Rear Panel** - New style terminal strip for DC Shelf rear panel battery connections*:*
A new "spring-loaded" terminal strip has been added to new DC shelves. You may find either the old one (screw-type) or the newer one. The newer one is depicted below:



Push bat handle to the right and insert wires at the rear of the terminal strip. The silk screening nomenclature remains the same for both style connectors.

July 1997

Shelf/Enclosure

Overview

The UAS 7000 product cards, the SCM (SpectraComm Manager card), the optional Alarm card and other UAS product cards are used in the SpectraComm/UAS Shelf and Enclosure described briefly in this chapter. For detailed information on the SpectraComm/UAS Shelf and Enclosure, refer to the product manual listed in *Related Publications* in the *Preface* of this manual.

Each shelf mounted SpectraComm Advanced Network Access transmission product interfaces with a standalone unit located at the far-end of the access loop. The wide variety of transmission products can be managed under a single network management scheme using the SpectraComm Manager (SCM) and its interface to an SNMP manager workstation.

Features

The SpectraComm shelf is constructed of formed sheet metal components measuring 7 inches (178 mm) high by 17.5 inches (445 mm) wide by 11.5 inches (292 mm) deep. Other features are:

- cabinet or open frame mountable
- each shelf accepts one or two power supplies
- 16 module slots and 2 power supply slots per shelf
- multiple shelf expansion provides an extra 2 power supply slots and 16 module slots
- Removable backplanes called connector panels which provide a diversity of products to be housed in the shelf
- plug-in power supply modules available in the following voltages:

  100/117 Vac (47-63 Hz)

  220/240 Vac (47-63 Hz)

  -48 and -60 Vdc (station battery) versions

The SpectraComm Multipak is constructed of molded plastic and formed sheet metal components measuring 9 inches (229 mm) high by 13.5 inches(343 mm) wide by 11.5 inches

(292 mm) deep. The enclosure has a hinged plastic door assembly with a removable tinted window that allows you to view the product card's LEDs. Other features are:

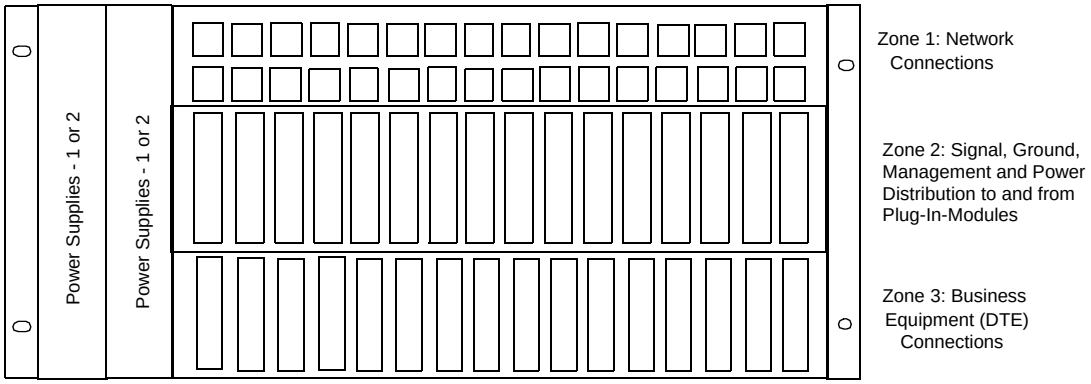
- low profile, compact design for desktop use
- packaging for 10 plug-in-modules
- separate rear connector zones for network and business equipment connections.
- plug-in power supply modules available in the following voltages:

  100/120 Vac (47-63 Hz)

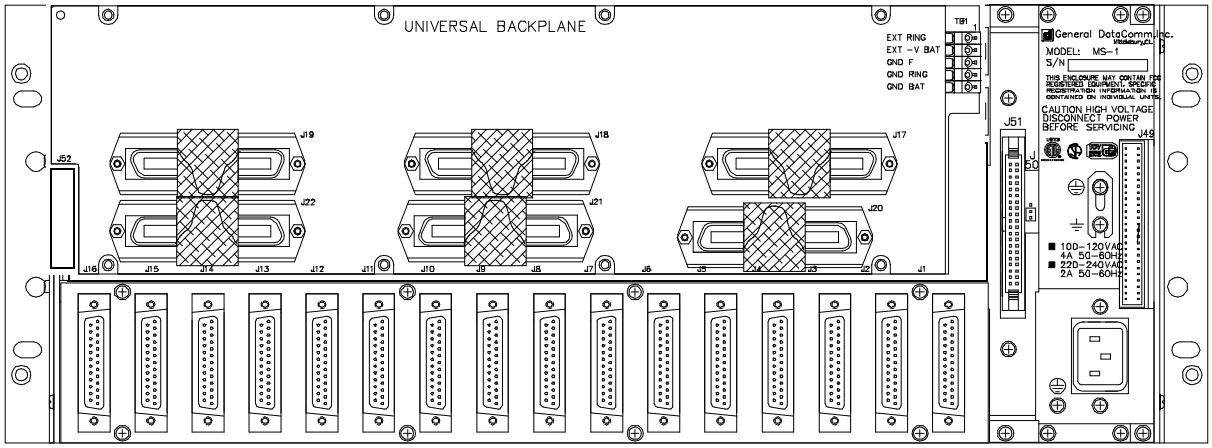
  220/240 Vac (47-63 Hz)

Zones

The rear panel of both the shelf and the enclosure is divided into three horizontal rows, (or Zones). Zone 1 (located at the top) and Zone 3 (located at the bottom) accept a connector panel. Zone 1 is used for network interfaces, Zone 3 is used for business equipment, and Zone 2 is used for internal busses and power. See *Figure 1-1 and 1-2.*



A. Front View - Shelf



B. Rear View - Shelf

Figure 1-1 Shelf

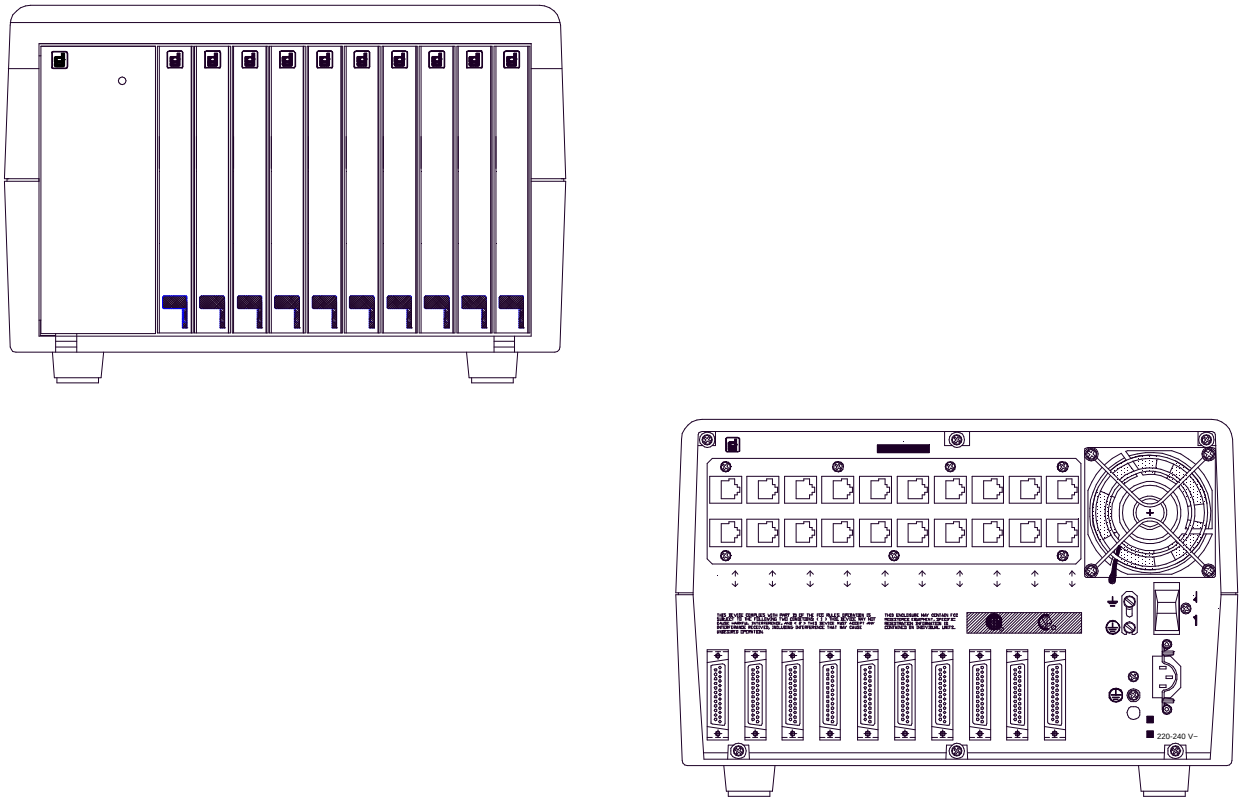
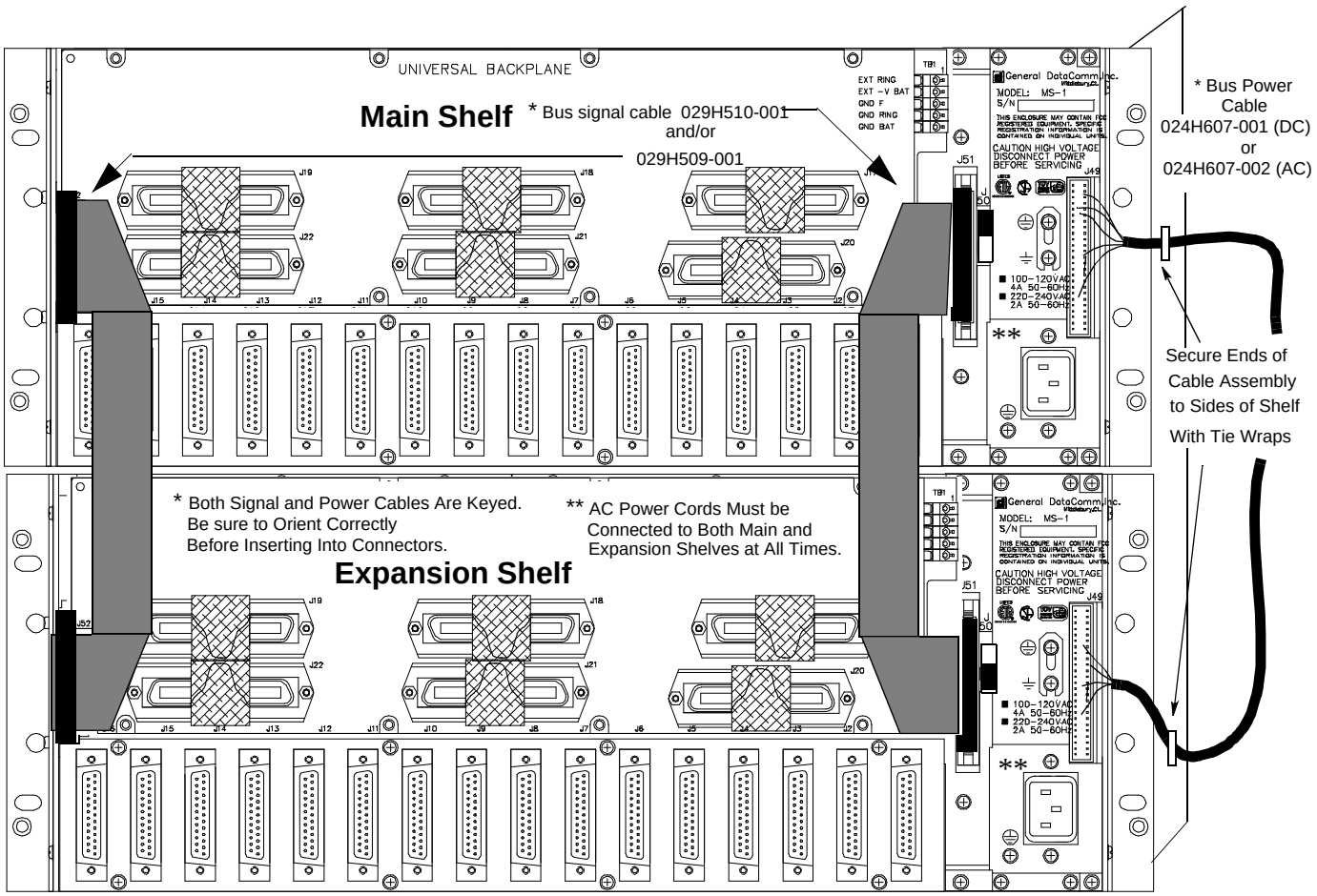


Figure 1-2 Enclosure

Rear Panel Connections

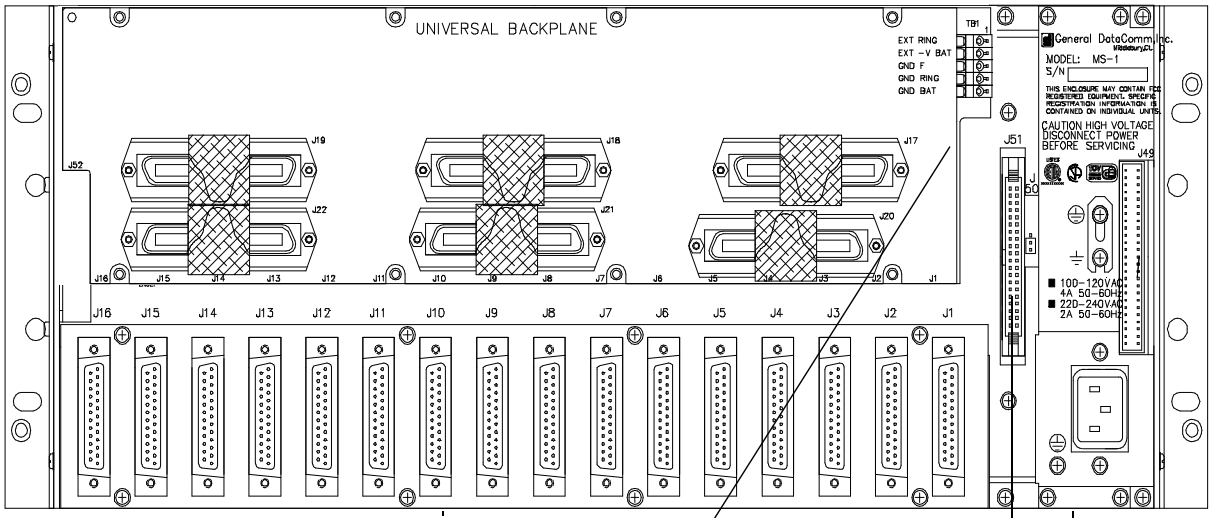
The following figure illustrates the rear panel connections to the shelf.

See *Figure 1-3*.



A. Multiple Shelf Cabling

Figure 1-3 Shelf Rear Panel (Sheet 1 of 2)



B. Address Jumper and TB1 Connections

EXT RING	Used for connecting an external ring generator required for certain product cards. Electrical rating is 6 A at 100VRMS.
EXT -V BAT	Used for connecting an external battery. Required for certain product cards. Electrical rating is 10 A at 56VRMS.
GND F	Used for connecting an external functional ground used in products requiring ground start, etc. Electrical rating is 6A.
GND RING	Used as the ground return for an external ring generator. Electrical rating is 6A.
GND BAT	Used for the return for an external battery. Normally connects to the positive side of the battery. Electrical rating is 10A.
Note: Refer to individual product manuals for specific external connections required for different applications.	

Figure 1-3 Shelf Rear Panel (Sheet 2 of 2)

NOTE

This backplane is capable of passing up to 2.048 Mbps signals. For best performance (noise, crosstalk, etc.) balanced circuits are required.

50-Pin Zone 1 Connections

This connector panel has six 50-pin female connectors. The pin assignments and connections are shown in *Table 1-1*. Refer to the individual card manuals for specific 50-pin Telco mapping.

Table 1-1 Universal Backplane Pin Assignments

Signal	SN Modem	PL Modem	T1	DDS	Voice/ Busses	HDSL	3 x 2B1Q Proprietary	DATX	3 x 2-Wire Switched	4 x 2-Wire Switched	TIA-568
(P=Private)											
P8		R1		R1	SB						Pair 4-
P7		T1		T1	M						Pair 4+
P6		TEK6			SG			Pass-thru			Pair 2-
P5			T		T	E1-T		Phone T			Pair 1+
P4			R		R	E1-R		Phone R			Pair 1-
P3		TEK5			E			Pass-thru			Pair 2+
P2		T	T1	T	R1	E1-T1		Pass-thru			Pair 3-
P1		R	R1	R	T1	E1-R1		Pass-thru			Pair 3+
					EXTRNG						
					-VBEXT	-VBEXT					
					GNDF	GNDF					
					GNDF	GNDF					
					GNDRNG						
					GNDBAT	GNDBAT					
(S=Switched)											
S8	PC			R1	SB	HDSL3-R	Line 3	GND		Tip 4	
S7	PR			T1	M	HDSL3-T	Line 3	+12	Tip 3	Tip 3	
S6	MIC				SG			Pass-thru	Tip 2	Tip 2	
S5	T		T		T	HDSL1-T	Line 2	Line T	Ring 1	Ring 1	
S4	R		R		R	HDSL1-R	Line 2	Line R	Tip 1	Tip 1	
S3	MI				E			Pass-thru	Ring 2	Ring 2	
S2			T1	T	R1	HDSL2-T	Line 1	Pass-thru	Ring 3	Ring 3	
S1			R1	R	T1	HDSL2-R	Line 1	Pass-thru		Ring 4	

Note: T-R is 4W Transmit (toward network) or 2W TI-RI is a 4W Receive (from network)

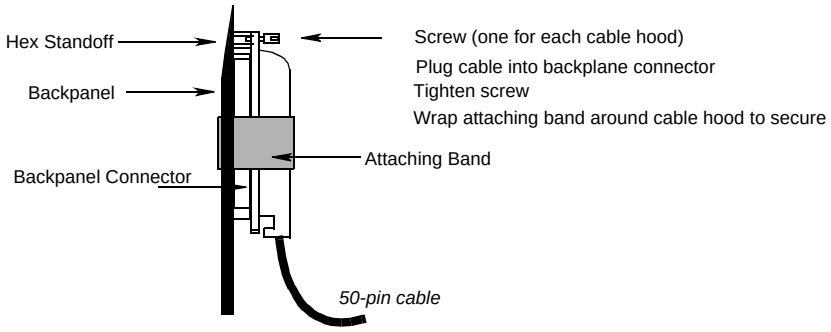
Table 1-1 Universal Backplane Pin Assignments (Cont.)

Signal	(Slot 1) J17	(Slot 2) J17	(Slot 3) J17	(Slot 4) J17	(Slot 5) J17	(Slot 6) J17
P1	1	5	9	13	17	21
P2	26	30	34	38	42	46
P3	2	6	10	14	18	22
P4	3	7	11	15	19	23
P5	28	32	36	40	44	48
P6	27	31	35	39	43	47
P7	4	8	12	16	20	24
P8	29	33	37	41	45	49
Signal	**(Slot 1) J20**	**(Slot 2) J20**	**(Slot 3) J20**	**(Slot 4) J20**	**(Slot 5) J20**	**(Slot 6) J20**
S1	1	5	9	13	17	21
S2	26	30	34	38	42	46
S3	2	6	10	14	18	22
S4	3	7	11	15	19	23
S5	28	32	36	40	44	48
S6	27	31	35	39	43	47
S7	4	8	12	16	20	24
S8	29	33	37	41	45	49
Signal	**(Slot 7) J18**	**(Slot 8) J18**	**(Slot 9) J18**	**(Slot 10) J18**	**(Slot 11) J18**	**(Slot 12) J18**
P1	1	5	9	13	17	21
P2	26	30	34	38	42	46
P3	2	6	10	14	18	22
P4	3	7	11	15	19	23
P5	28	32	36	40	44	48
P6	27	31	35	39	43	47
P7	4	8	12	16	20	24
P8	29	33	37	41	45	49
Signal	**(Slot 7) J21**	**(Slot 8) J21**	**(Slot 9) J21**	**(Slot 10) J21**	**(Slot 11) J21**	**(Slot 12) J21**
S1	1	5	9	13	17	21
S2	26	30	34	38	42	46
S3	2	6	10	14	18	22
S4	3	7	11	15	19	23
S5	28	32	36	40	44	48
S6	27	31	35	39	43	47
S7	4	8	12	16	20	24
S8	29	33	37	41	45	49

Signal	(Slot 13) J19	(Slot 14) J19	(Slot 15) J19	(Slot 16) J19
P1	1	5	9	13
P2	26	30	34	38
P3	2	6	10	14
P4	3	7	11	15
P5	28	32	36	40
P6	27	31	35	39
P7	4	8	12	16
P8	29	33	37	41
Signal	**(Slot 13) J22**	**(Slot 14) J22**	**(Slot 15) J22**	**(Slot 16) J22**
S1	1	5	9	13
S2	26	30	34	38
S3	2	6	10	14
S4	3	7	11	15
S5	28	32	36	40
S6	27	31	35	39
S7	4	8	12	16
S8	29	33	37	41

NOTE

When 50-pin shielded cables are attached to the Universal Backplane connectors, be sure to use frame grounding kit (GDC Part No. 010K071-001) which include 3 sets of screws and clips (discard). See drawing below.



Multiple Power Supplies (shelf only)

You can power the shelf with one power supply or with multiple redundant, load-sharing power supplies in one shelf or in two adjacent, interconnected shelves (using associated bus power cable) with up to two supplies per shelf. Each shelf is required to house at least one power supply. Additional power supplies need to be installed when redundancy is required. A redundant power supply system has at least one more installed power supply than is required for proper operation. For example, if one power supply fails, the remaining power supplies can power the installed cards. The installed power supplies actively share current, dividing the total load among all functional supplies.

Adding a second power supply in a shelf provides redundancy such that if one power supply fails, the remaining power supply has the capacity to maintain power to that shelf. The second power supply shares current with the first power supply with the benefit that both power supply modules run cooler and therefore have a lower expectant failure rate. *Table 1-3* defines the number of power supplies required for various configurations.

Table 1-3 Shelf/Power Supply Configurations

Application	Load Number from 0 to 16	Load Number from 16 to 32
Single Shelf Non-Redundant	One	Not Allowed
Single Shelf Redundant	Two	Not Allowed
Multi-Shelf Non-Redundant	Two	Two
Multi-Shelf Redundant	Two to Four	Three to Four

1. Be sure to install shelves and power supplies as described in the UAS Shelf manual. Failure to do so may result in overheating and subsequent power supply shutdown.

2. When you install only one power supply, for safety compliance, you MUST install a power supply blank front panel, P/N 010D727-001, to cover the unused slot.

Grounding

Proper grounding is important for several reasons.

Safety

The chassis of the AC powered shelf or enclosure must be connected to protective (earth) ground for safety reasons. This is normally done via the power cord ground wire, or optionally via a separate ground wire from a grounded post (chassis ground) on the rear panel.

Figure 1-4 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 Y1OD. 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 1-4 using the hardware supplied in the kit.

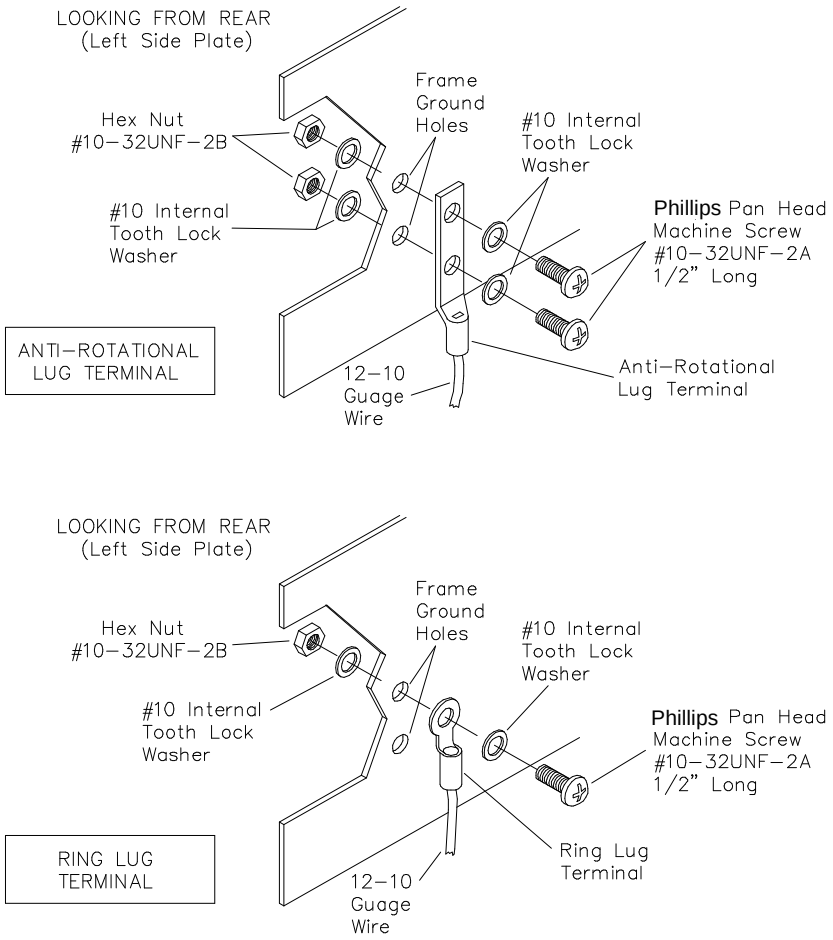


Figure 1-4 Shelf Frame Ground Connection

EMI (Electromagnetic Interference)

Zone 3 - Shielded cables minimize EMI and are required for Zone 3 I/O connections to meet the radiated EMI limits for FCC Part 15 Class A and EN55022 Class A.

These shielded cables are connected to the SpectraComm chassis and thus to local earth ground. This occasionally causes a problem if the equipment to which the shelf is connected is at a different ground potential than the shelf, and that equipment also grounds the cable shields to its earth ground. These shielded cables are connected to chassis ground via the two mounting screws on the connector hood. Refer to paragraph *Tying Signal Ground to Chassis Ground* and the following instructions. Use that procedure to suppress unwanted Electromagnetic Interference (EMI) from the Zone 1 unshielded cables. Each Zone 1 unshielded cable must be wound around a toroid as shown in order to meet the requirements of the International EMI Specification EN55022 Class A.

Tying Signal Ground to Chassis Ground

A large ground current can flow in the shield of a shielded cable if it is connected to ground at both ends, and the grounds at the two equipments are not at the same potential. To avoid large currents, make sure that a potential difference of less than 0.25 V RMS exists between the ground of the unit and the ground of the equipment to which it is connected. An alternative is to break the shield continuity in the middle of a long cable run or to connect the shield to ground at only one end.

It is common practice to tie chassis ground and signal ground together. Signal ground is the 0V reference for the digital circuits in the unit and is also the reference for unbalanced data interfaces such as EIA/TIA-232-E and RS423. Tying these grounds together is usually best for AC power line noise immunity, but a problem can exist if signal grounds on two equipments (at different chassis ground potentials) are connected together via a data cable. A large current can flow in the signal ground lead (EIA/TIA-232-E pin 7). To prevent this, make sure the potential difference between grounds is less than 0.25 V RMS, or open the connection between chassis ground and signal ground on the unit. Alternatively, connect a 100 ohm 1 watt resistor between chassis ground and signal ground. This limits currents in signal ground leads and still maintains noise immunity benefits.

The enclosure and shelf are shipped with the signal and chassis ground strapped closed at the two screw terminals located on the rear panels.

Some local electrical codes and equipment manufacturers recommendations may require separation of signal and chassis ground. For these conditions, leave the strap open. In this case, a customer-provided wire should be connected to signal ground. *Figure 1-5* illustrates the enclosure and shelf ground connections.

To open signal ground and chassis ground:

1. Loosen both ground post screws.
2. Slide the strap up, then rotate it one-half turn to prevent it from contacting the signal ground terminal.
3. Tighten both screws.
4. Connect a wire from earth ground to the signal ground terminal.

To isolate signal ground from chassis ground:

1. Loosen both ground screw posts.
2. Slide the strap up, then rotate it one-half turn to prevent it from contacting the signal ground terminal.
3. Wrap one resistor lead one-half turn clockwise around the chassis ground screw and the other lead around the signal ground screw.
4. Tighten both screws.

To common signal ground to chassis ground:

1. Loosen both ground post screws.
2. Slide or rotate the strap to make contact with both ground terminals.
3. Tighten both screws.

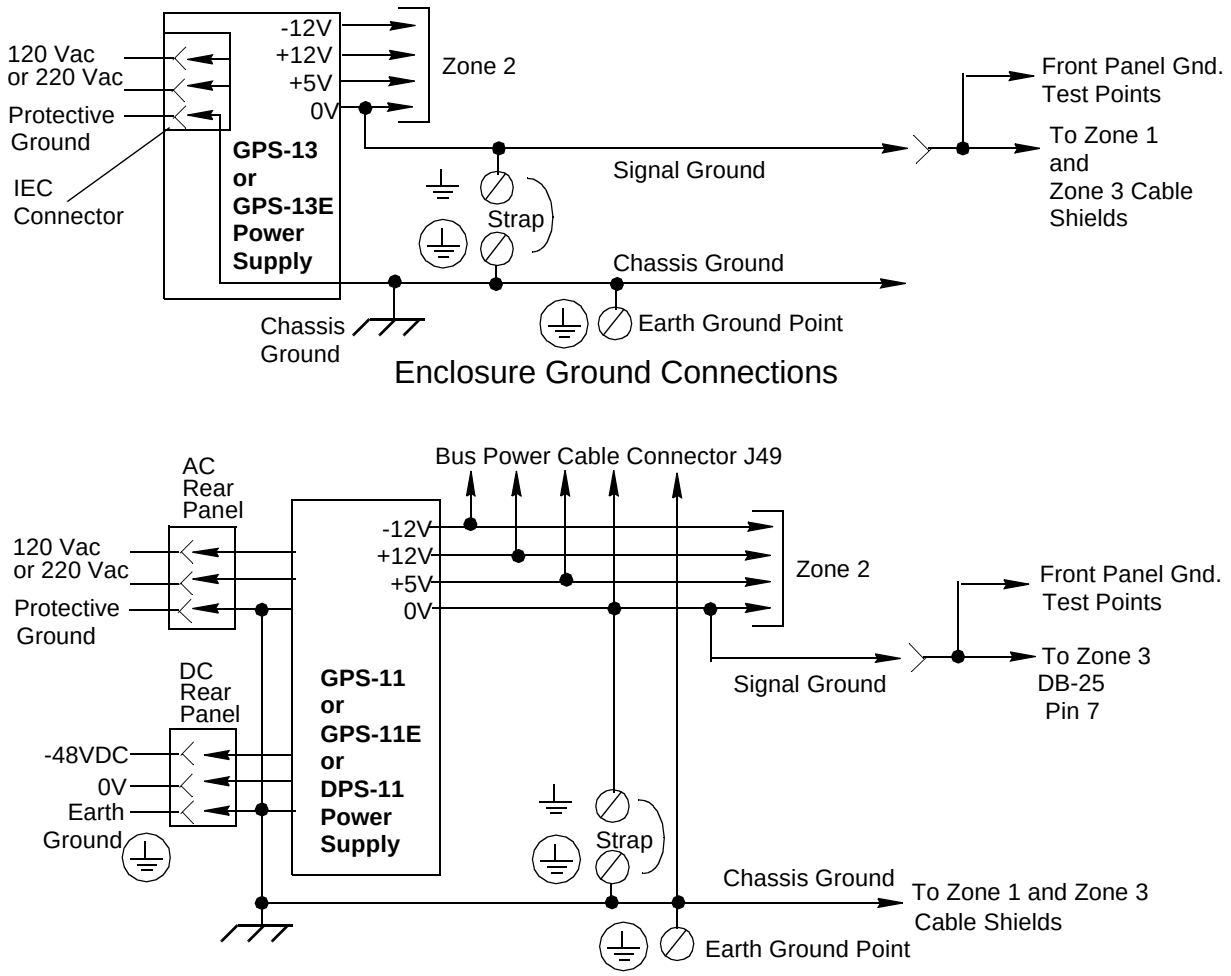


Figure 1-5 Ground Connections

Cooling Requirements (Shelf)

We recommend that you mount the shelf (and enclosure) in an area of unrestricted air flow. Do not block the top, bottom, and sides. There must be adequate provision for the circulation of cooling air and exhaust of warm air. Refer to *Table 1-4* and the *Installation and Operation SpectraComm/UAS Shelf and Enclosure* manual *GDC Publication No. 010R302-000* for detailed information.

Table 1-4 Shelf Configurations

Cabinet	Power Supplies	Cooling Method	
		Fan [1]	Baffle [2]
EP-2M			
1 shelf	non-redundant	optional	optional
	redundant	optional	optional
2 shelves	non-redundant	1 required	1 required
EP-4			
1 shelf	non-redundant	optional	not applicable
	redundant	optional	not applicable
2 shelves	non-redundant	optional	not applicable
	redundant	optional	not applicable
4, 6, 8 shelves	non-redundant	1 required	not applicable
	redundant	1 required	not applicable
Open frame			
1 shelf	non-redundant	optional	optional
	redundant	optional	optional
2 shelves	non-redundant	1 required	1 required
	redundant	optional	optional
4 shelves	non-redundant	1 required	3 required
	redundant	1 required	1 required
6 shelves	non-redundant	2 required	5 required
	redundant	2 required	2 required
8 shelves	non-redundant	2 required	7 required
	redundant	2 required	3 required

1-Use of the fan assembly for forced air cooling is optional in single-shelf configurations and in configurations with two shelves with redundant supplies. Most other configurations require one or more fan assemblies.

2-You may use the baffle assembly (for convection cooling) instead of the fan assembly (for forced air cooling) only in an EP-2M cabinet or open frame rack with redundant power supplies. Do not use it in an EP-4 cabinet.

Table 1-5 Equipment List

Description	GDC Part No.
Shelves	
Shelf MS-2 Mod. 7, (Mass Term) 100/120 Vac	010M073-001
MS-2 Shelf 100/120 Vac	010B150-001
GPS-11 Power Supply	035P034-001
Z3-S-16DB25, 16-Slot DB25	010C339-001
Blank Panel, Power Supply	010D727-001
Universal Zone 1 Backplane	010C377-001
Shelf MS-2 Mod.8, (Mass Term) 220/240 Vac	010M074-001
MS-2E AC Export Shelf 220/240 Vac	010B151-001
GPS-11E Power Supply	035P034-002
Z3-S-16DB25, 16-Slot DB25	010C339-001
Blank Panel, Power Supply	010D727-001
Universal Zone 1 Backplane	010C377-001
Shelf MS-2 Mod. 9, Dual Modular (DMS) -48, -60 Vdc	010M075-001
MS-2/DC Shelf -48, -60 Vdc	010B152-001
DPS-11 Power Supply	041P050-001
Z3-S-16DB25, 16-Slot DB25	010C339-001
Blank Panel, Power Supply	010D727-001
Universal Zone 1 Backplane	010C377-001
Shelf MS-2 Mod. 12, Dual Modular (DMS) -48, -60 Vdc (Redundant PS)	010M076-001
MS-2/DC Shelf -48, -60 Vdc	010B152-001
DPS-11 Power Supply (2)	041P050-001
Z3-S-16DB25, 16-Slot DB25	010C339-001
Universal Zone 1 Backplane	010C377-001
Enclosures	
Enclosure ME-2 Model 1 (100/120 Vac) with DB25 Zone 3 connectors	010B163-001
Enclosure ME-2 Model 2 (100/120 Vac) with V.35 Zone 3 connectors	010B164-001
Enclosure ME-2E Model 3 (220/240 Vac international); power cord optional, specify type, with DB25 Zone 3 connectors	010B163-002
Enclosure ME-2E Model 4 (220/240 Vac, international); power cord optional, specify type, with V.35 Zone 3 connectors	010B164-002
Enclosure Power Supplies	
GPS-13 100/120 Vac input power supply	035P010-001
GPS-13E 220/240 Vac input power supply (international)	035P010-002
Miscellaneous Equipment	
19" Fan Tray Assembly, AC Domestic (120 VAC)	010B160-001
19" Fan Tray Assembly, AC Export (220/240 VAC)	010B161-001
19" Fan Tray Assembly, -48 VDC	010B162-001
19 " to 23" Mounting Brackets, Center-of Gravity (for use with Fan Tray Assembly)	0108K347-001
19" to 23" Mounting Brackets, Flush-Mount (for use with Fan Tray Assembly)	010K348-001

Table 1-5 Equipment List (Cont.)

Air Baffle Assembly	010D787-001
Blank Panel, Card Slot	010P142-001
Blank Panel, Power Supply	010D727-001
Blank, 8-Slot	010K341-001
Blank, 16-Slot	010K343-001
Noise Immunity Toroid	235-001-002
Universal Backplane Kit	010K072-001
66M Block	SYS= 326P032
66E Block	338C001-A06
Optional Cards	
Alarm Card with Interface Adapter	010M072-001
SpectraComm Manager Card	058P150-001
Cables	
Power Cord - Domestic 100/120 V	830-024-003
Power Cord - International 220V(Eur. - 2-prong)	830-061-002
Power Cord - International 220V(UK)	830-060-102
Bus Power Cable (expansion shelf - AC power supply)	024H607-002
Bus Power Cable (expansion shelf - DC power supply)	024H607-001
Bus Signal Cable (inter-shelf 40-pin)	029H510-001
Bus Signal Cable (inter-shelf 30-pin)	029H509-001
EIA-232 to V.35 Cable	027H572-001
Cable, M/M, shielded, 50-pin 10 feet	830-002S011
Cable, M/M, shielded, 50-pin 25 feet	830-002S008
Cable, M/M, shielded, 50-pin 50 feet	830-002S012

.

INSERT TAB # 3 HERE

GDC 087R702-001
Issue 1, February 1997

Installation and Operation

UAS 7000

Network Interface Unit
Model NIU 7001

General DataComm

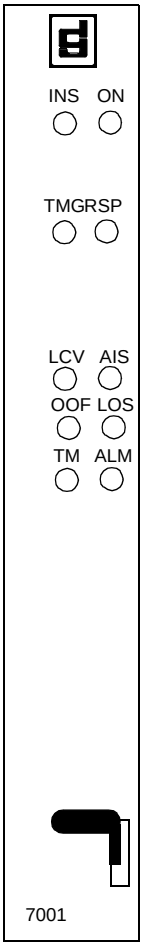
NIU 7001

The T1 NIU (Network Interface Unit) 7001 provides a connection to T1 and Fractional T1 terminated services. It is used as the network interface to the shelf backplane. Each 7001 supports a single T1 line. The NIU 7001 is a single slot card that may be installed in single or multiple shelves or enclosures. Each of the T1 interfaces supports SF or ESF multiframe, with either AMI or B8ZS line coding.

The unit is fully network managed by the shelf resident GDC SpectraComm Manager (SCM), and an associated SNMP manager.

Other features are:

- can be mixed or matched with other SpectraComm UAS data sets in the same shelf. ***A 7002 cannot reside in the same system.***
- supports concentrator for central termination function.
- full T1s can be terminated in a single shelf; up to four NIUs may be supported in a single or dual shelf.
- multiplexes Drop-Side Interface Units (DIUs) such as the 7616 via the shelf backplane.

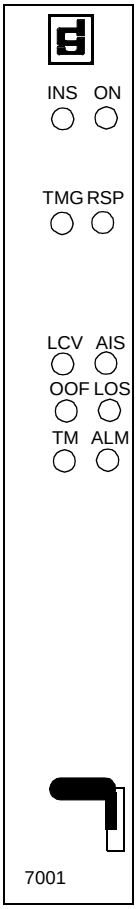


Front Panel Indicators

Table 1-1 describes the front panel indicators.

Table 1-1 Front Panel Indicators

Indicators	
LED	**Use**
General	
INS	In Service. Green - constant = Basecard in service.
ON	Power ON. Green - power is applied
TMG	Timing. Green - Lights when supplying 8 k timing source to shelf.
RSP	Response. Green - Lights upon transmission of a backplane NMS command.
Network	
LCV	Line Code Violation. Red - Lights upon reception of line code violation in the received T1 data.
AIS	Alarm Indication Signal. Red - Lights upon the reception of a defect condition from the received T1 signal.
LOS	Loss of Signal. Red - Lights upon absence of an T1 signal.
OOF	Out of Frame. Red - Lights upon detection of loss of selected T1 framing.
Status	
TM	Test Mode. Red - Lights when unit is undergoing a diagnostic test. Flashes if errors occur in a self-test pattern recognition.
ALM	Alarm. Red - Lights when any alarm threshold is exceeded.



Options

The NIU 7001 has only one option, a normal or redundant selection.

Refer to *Figure 1-1*.

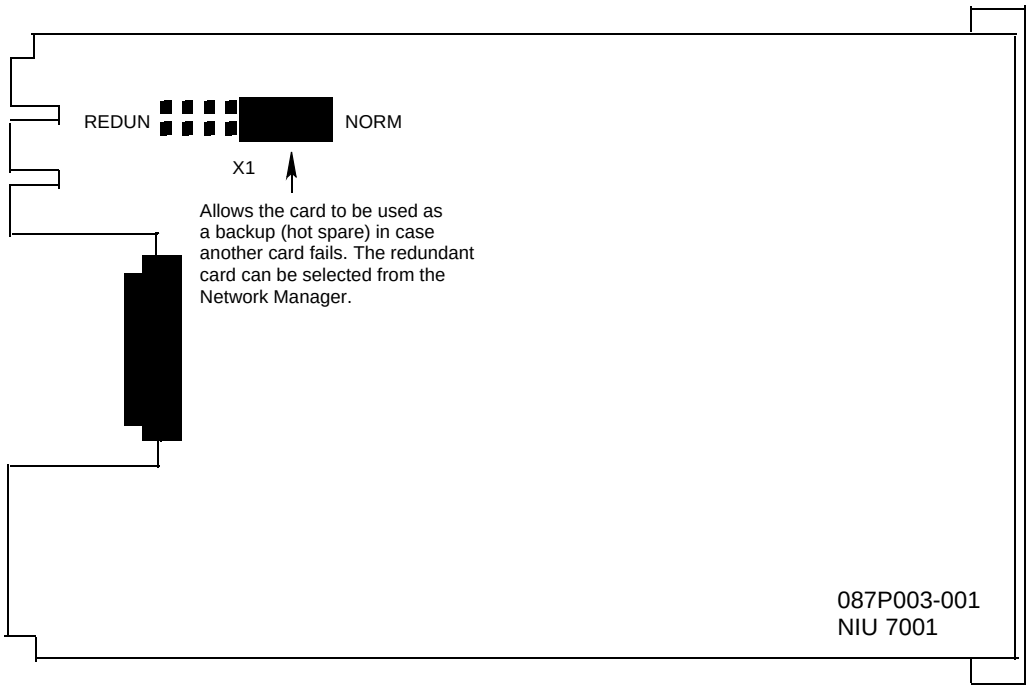


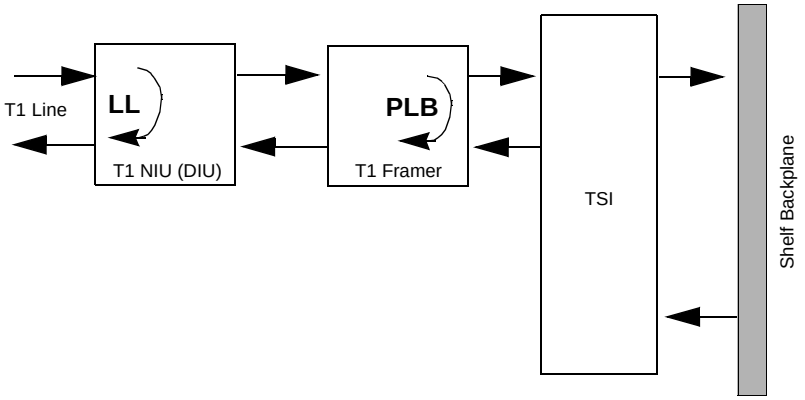
Figure 1-1 NIU 7001

Tests

The NIU 7001 performs the following diagnostic loopbacks:

- Line loopback (LL) - Loops the Telco transmit and receive paths back towards the T1 network.
- Payload loopback (PLB) - Loops the recovered T1 receive and transmit paths back towards the T1 network.

You may initiate these tests using UAS or Team 7000 network management. See *Figure 1-2*.



	Test	Source	Self-Test	Configuration
LL	T1 Line Loopback	UAS	------	Network
PLB	T1 Payload Loopback	UAS	------	Network

Figure 1-2 NIU 7001 Loopbacks - UAS

Table 1-2 50-Pin Telco Mapping

Rear Panel 50-Pin "J" Nos.	Slot No.	7001			
		Transmit Tip	Transmit Ring	Receive Tip	Receive Ring
J17	1	28	3	26	1
	2	32	7	30	5
	3	36	11	34	9
	4	40	15	38	13
	5	44	19	42	17
	6	48	23	46	21
J18	7	28	3	26	1
	8	32	7	30	5
	9	36	11	34	9
	10	40	15	38	13
	11	44	19	42	17
	12	43	23	46	21
J19	13	28	3	26	1
	14	32	7	30	5
	15	36	11	34	9
	16	40	15	38	13

Parts List and Specifications

Table 1-3 Parts List and Specifications

Parts List	
087P003-001	NIU 7001 module
Specifications	
Ambient Temperature (operating)	0 to 50° C
Humidity (operating)	5% to 95% (non condensation)
Altitude operating non-operating	 0 to 10,000 feet 0 to 40,000 feet
Interface	
Communication line	T1 digital carrier (non-load, staggered-twist ABAM, PIC, or pulp-insulated exchange-type cable, 19 to 26 gauge).
Line Impedance	100 ohm
Frequency	1,544,000 bps ±50 bps
Pulse amplitude - with surge protection	2.40 to 3.60 V at 60° - may vary over a cycle of 60 Hz current.
Unbalance in height of adjacent negative and positive pulses	200 mV (maximum)
Width of output pulse (half amplitude)	324 nsec ± 45 nsec
Unbalance in width of adjacent negative and positive pulses	20 nsec (maximum)
Time between two consecutive pulses of opposite polarity	648 nsec ± 15 nsec (measured at half amplitude point of leading edges)
Maximum rise or falling time	100 nsec
Overshoot at trailing edge of pulse	10% to 30% of pulse amplitude
Line Build-Out	0, 7.5, 15, or 22.5 dB (selectable or automatic) at 772 kHz

GDC 087R702-000
Issue 1, February 1997

Installation and Operation

UAS 7000

Network Interface Unit
Model NIU 7002

General DataComm

Errata Sheet
for
Installation and Operation
UAS 7000
Network Interface Unit
Model NIU 7002

Publication 087R702-000, Issue 1

Overview

This publication reflects changes to the Installation and Operation manual for the NIU 7002. Please make a note on the corresponding pages.

Page 1-2 **Table 1-1** Front Panel Indicators:
Under **LED** *column:*
LOS after Red -.....E1 signal - *add* (May flicker on LOS condition).
OOF after Red -.....E1 framing - *add* (May flicker on LOS condition).

*Page 1-3 under "***Options***" heading:*
*Delete "*Both must match*".*
In Figure 1-1 NIU 7002 description of X1 option switch:
*Add "*must be set to NORM*" after* NOT SUPPORTED

Page 1-4 under **Tests** *heading:*
Add after first bulleted item - (All 32 DS0s)
Add after second bulleted item - (FAS and NFAS are generated in E1 Framer)
In illustration delete - (DIU) *from first block.*

Page 1-6 Table 1-3 - Impedance *row should read:*
"75 ohm coax (unbalanced transmit and receive shield are common) remote side or 120 ohm twisted pair (Balanced)."

June, 1997

NIU 7002

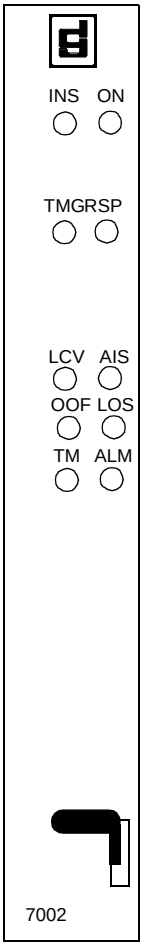
NIU 7002

The NIU (Network Interface Unit) 7002 provides a connection to E1 networks. It is used as the network interface to the shelf backplane. Each 7002 supports a single E1 line. The NIU 7002 is a single slot card that may be installed in single or multiple shelves or enclosures. Each of the E1 interfaces supports Basic or CRC-4 multiframe, with HDB3 or AMI line coding.

The unit is fully network managed by the shelf resident GDC SpectraComm Manager (SCM), and an associated SNMP manager.

Other features are:

- can be mixed or matched with other SpectraComm UAS data sets in the same shelf. ***A 7001 cannot reside in the same shelf.***
- supports concentrator for central termination function
- full E1s can be terminated in a single shelf; up to four NIUs may be supported in a single or dual shelf
- multiplexes Drop-Side Interface Units (DIUs) like the 7616 via the shelf backplane.



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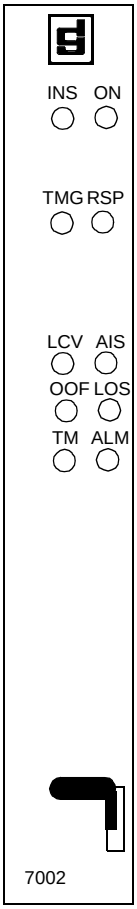


Options

The NIU 7002 has two options, a 75 or 120 ohm line impedance selection and Normal or Redundant. Both must match.

Refer to *Figure 1-1*.

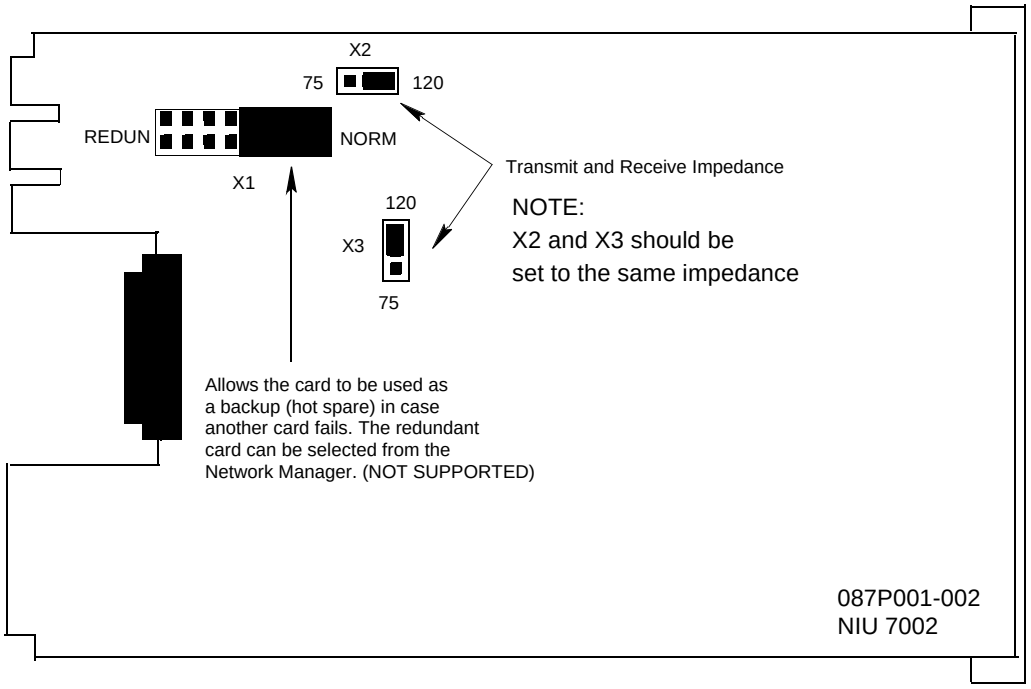


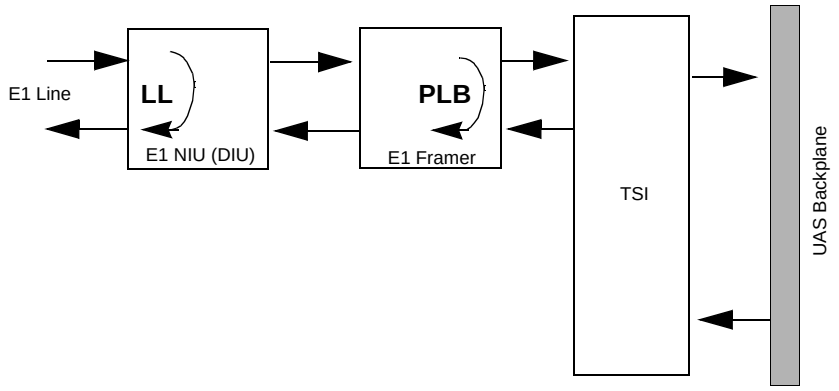
Figure 1-1 NIU 7002

Tests

The NIU 7002 performs the following diagnostic loopbacks:

- Line loopback (LL) - Loops the Telco transmit and receive paths back towards the E1 network.
- Payload loopback (PLB) - Loops the recovered E1 receive and transmit paths back towards the E1 network.

You may initiate these tests using UAS or Team 7000 network management. See *Figure 1-2*.



	Test	Source	Self-Test	Configuration
LL	E1 Line Loopback	UAS	------	Network
PLB	E1 Payload Loopback	UAS	------	Network

Figure 1-2 NIU 7002 Loopbacks - UAS

Table 1-2 50-Pin Telco Mapping

Rear Panel 50-Pin "J" Nos.	Slot No.	7002			
		Transmit Tip	Transmit Ring	Receive Tip	Receive Ring
J17	1	28	3	26	1
	2	32	7	30	5
	3	36	11	34	9
	4	40	15	38	13
	5	44	19	42	17
	6	48	23	46	21
J18	7	28	3	26	1
	8	32	7	30	5
	9	36	11	34	9
	10	40	15	38	13
	11	44	19	42	17
	12	43	23	46	21
J19	13	28	3	26	1
	14	32	7	30	5
	15	36	11	34	9
	16	40	15	38	13

Parts List and Specifications

Table 1-3 Parts List and Specifications

Parts List	
087P001-002	NIU 7002 module
209-044-001	RJ48C to Dual 75 ohm unbalanced E1 BNC Connector
Specifications	
Ambient Temperature (operating)	0 to 50° C
Humidity (operating)	5% to 95% (non condensation)
Altitude operating non-operating	 0 to 10,000 feet 0 to 40,000 feet
Rate	2048 kbps
Framing	E1 Framed G.704
Interface	2048 kbps per G.703 and G.704 (-6.0 dB receiving sensitivity)
Impedance	75 ohm coax remote side or 120 ohm twisted pair.

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Altitude operating non-operating	 0 to 10,000 feet 0 to 40,000 feet
Rate	2048 kbps
Framing	E1 Framed G.704
Interface	2048 kbps per G.703 and G.704 (-6.0 dB receiving sensitivity)
Impedance	75 ohm coax remote side or 120 ohm twisted pair.

INSERT TAB # 4 HERE

GDC 087R703-000
Issue 1, February 1997

Installation and Operation

UAS 7000

Network Interface Unit
Model DIU 7616

General DataComm

General DataComm GDC Publication No. 087R703 -000-E1

Errata Sheet for Installation and Operation

UAS 7000
Network Interface Unit
Model DIU 7616

Publication 087R703-000, Issue 1

Overview

This publication reflects changes to the Installation and Operation manual for the DIU 7616. Please make a note on the corresponding pages.

Page 1-3 Figure 1-1 define X7 through X12 Loops:
Add under X8 - (Loop 2)
under X10 - (Loop 1)
under X12 - (Loop 3)

*Page 1-4 Change Figure 1-2 and add new information under "*Loop Diagnostics*":*

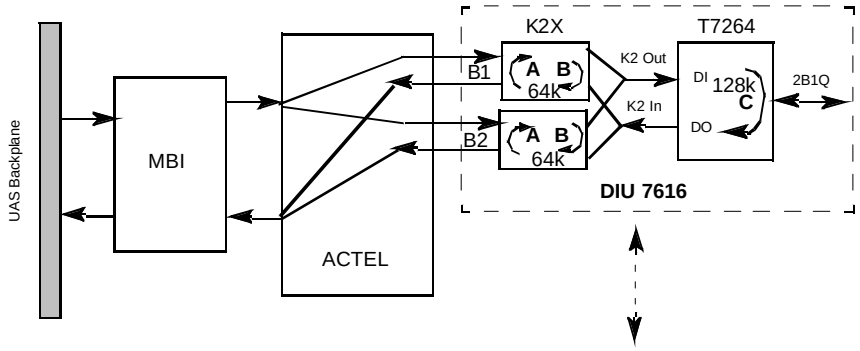


Figure 1-2 DIU 7616 Loopbacks

Loop Diagnostics

Loops A and B	
ST (Self-Test)	Normally green. Flashes red when errors are detected.
DL (Digital Loopback)	Normally solid red. Flashes when 2B1Q line is open.
UT (Unit Test)	Flashes red.
NOTES: K2 - (T7264) Lucent Technologies Inc. 2B1 Q Line Interface Unit. K2X - GDC LSI used to convert 512kbps multiplex bus to 64 kbps DTE interfaces. MBI - Multiplex Bus Interface - GDC LSI that interfaces to the backplane. FPGA - GDC LSI that converts 4 Mbit backplane to 64kbit, (K2X) B1 and B2.	

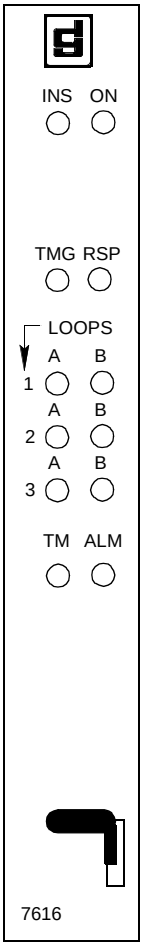
DIU 7616

The DIU (Drop-Side Interface Unit) 7616 provides a connection as a two-wire transmission product that uses 2B1Q for it's line coding scheme as defined in ITU G.960. Three basic rate loops are supported. Each loop supports 64k, dual 64k or 128kbps data rates.

The unit is fully network managed by the shelf resident GDC SpectraComm Manager (SCM) and an associated SNMP manager.

Other features are:

- fully compliant with ITU I.430.
- SNMP managed via SCM Management Card an associated backplane.
- complies with basic rate ISDN loopbacks.
- six 64 kbps or three 128 kbps channels are provided.
- Internal independent test pattern generation and detection.
- three transmitter timing options.
- can generate Loop Sense Current described in ITU I.430.

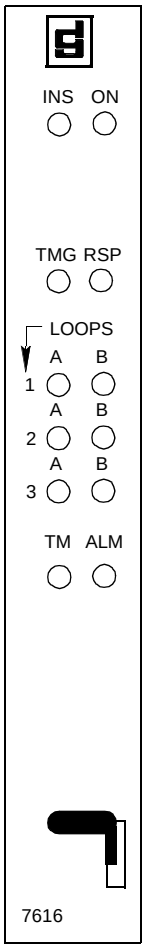


Front Panel Indicators

Table 1-1 describes the front panel indicators.

Table 1-1 Front Panel Indicators

Indicators	
LED	**Use**
General	
INS	In Service. Green - constant = In service.
ON	Power ON. Green - power is applied
TMG	Timing. Green - Lights when supplying 8k timing source to shelf.
RSP	Response. Green - Flashes when the card is responding to a SCM message.
LOOPS A, B 1 2 3	Tri-color LEDs (red/green/off) are used for Channel A (A) and Channel B (B) for all three loops (1, 2, 3). Red - solid - Indicates a channel is in the test mode. Flashes when an alarm exists. Green - solid - Active in data mode for each channel. At 128 kbps, both Channel A and B LEDs are green.
Status	
TM	Test Mode. Red - Lights during a test mode. There is one LED for all three loops.
ALM	Alarm. Red - (there is one LED for all three loops) - solid - indicates an alarm exists. Refer to Tests.



Options

The DIU 7616 basecard has six jumpers that select line power for either the LTU or NTU function.

You select options by positioning the jumpers on the card.

Set the jumpers as shown in *Figure 1-1*.

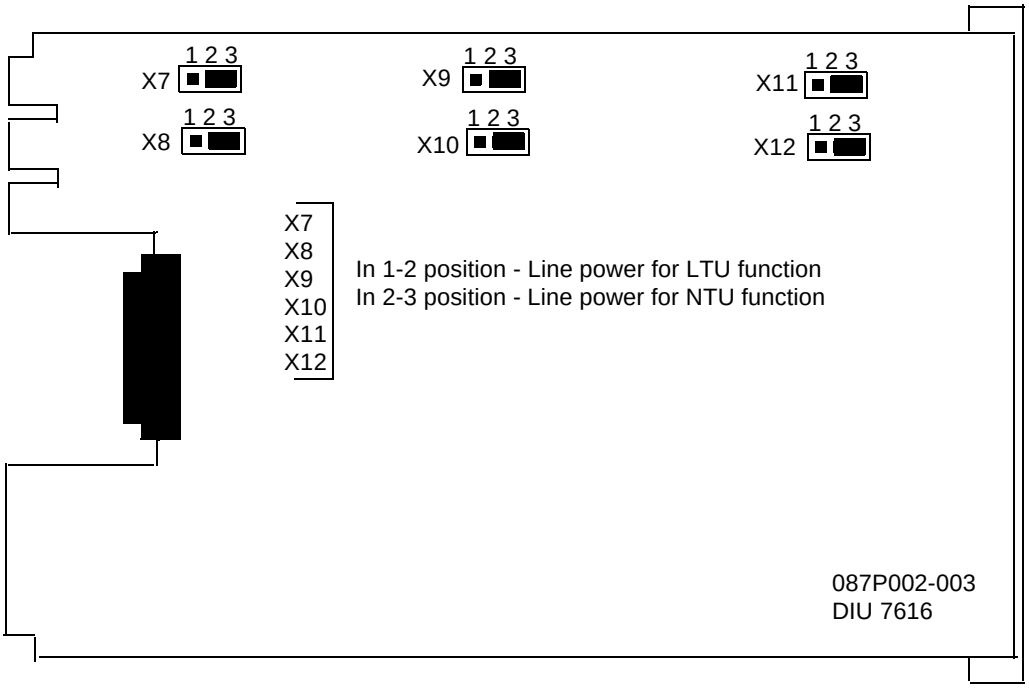
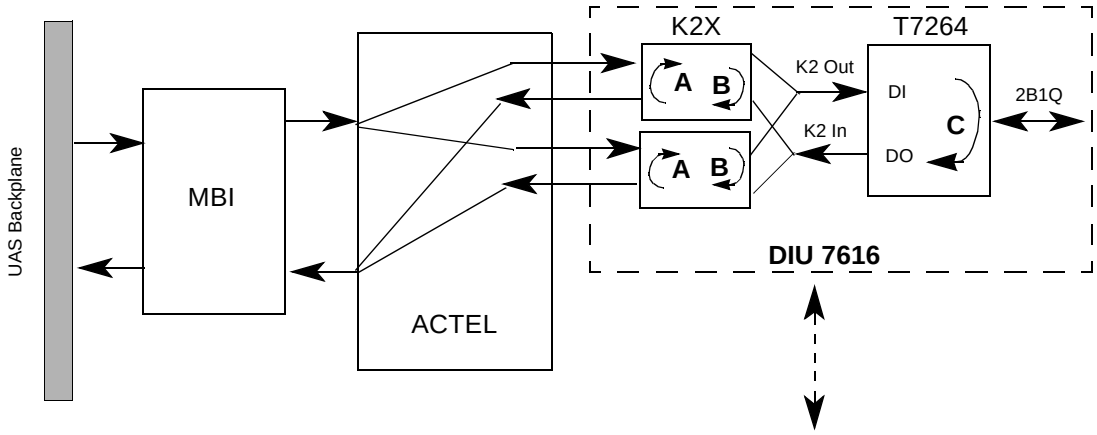


Figure 1-1 DIU 7616

Tests

The DIU 7616 supports all of the loopbacks required by Basic Rate ISDN. All loopbacks are network managed. Each channel of each loop is capable of the loops shown in *Figure 1-2*.



A, C = Unit Test	Starts a 2047 pattern generator at A and loopbacks at C.
B = Digital Loopback	This loopback directs data from RXDx to TXDx toward the E1 Interface.
Self-Test	Starts a 2047 pattern generator at K2x toward the 2B1Q line.

Figure 1-2 DIU 7616 Loopbacks

Loop Diagnostics

	Loops A&B
ST (Self-Test)	Normally green. Flashes red when errors are detected.
DL (digital Loopback)	Normally solid red. Flashes when 2B1Q line is open.
UT (Unit Test)	Flashes red.

Table 1-2 50-Pin Telco Mapping

Rear Panel 5-Pin "J" Nos.	Slot No.	7616		
		Loop 1	Loop 2	Loop 3
J20	1	1, 26	3, 28	4, 29
	2	5, 30	7, 32	8, 33
	3	9, 34	11, 36	12, 37
	4	13, 38	15, 40	16, 41
	5	17, 42	19, 44	20, 45
	6	21, 46	23, 48	24, 49
J21	7	1, 26	3, 28	4, 29
	8	5, 30	7, 32	8, 33
	9	9, 34	11, 36	12, 37
	10	13, 38	15, 40	16, 41
	11	17, 42	19, 44	20, 45
	12	21, 46	23, 48	24, 49
J22	13	1, 26	3, 28	4, 29
	14	5, 30	7, 32	8, 33
	15	9, 34	11, 36	12, 37
	16	13, 38	15, 40	16, 41

Parts List and Specifications

Table 1-3 Parts List and Specifications

Parts List	
087P002-003	DIU 7616 module
Specifications	
Ambient Temperature (operating)	0 to 50 ° C
Humidity (operating)	5% to 95% (non condensation)
Altitude operating non-operating	 0 to 10,000 feet 0 to 40,000 feet
Interface	
Operating mode	Full duplex with adaptive echo cancellation.
Data rate	160 kbps total: 128 kbps user data, 16 kbps internal control, 16 kbps for timing and synchronization.
Line coding	2B1Q, compatible with ANSI T1.601.
Line requirements	2-wire, non-loaded metallic circuit.
Operating range	5.5 km (18,000 ft.) - with 0.4 mm (26 gauge wire)

INSERT TAB # 5 HERE