UAS® 7000

DIU 7723 MR

Installation and Operation Manual

General DataComm
Network Access Division
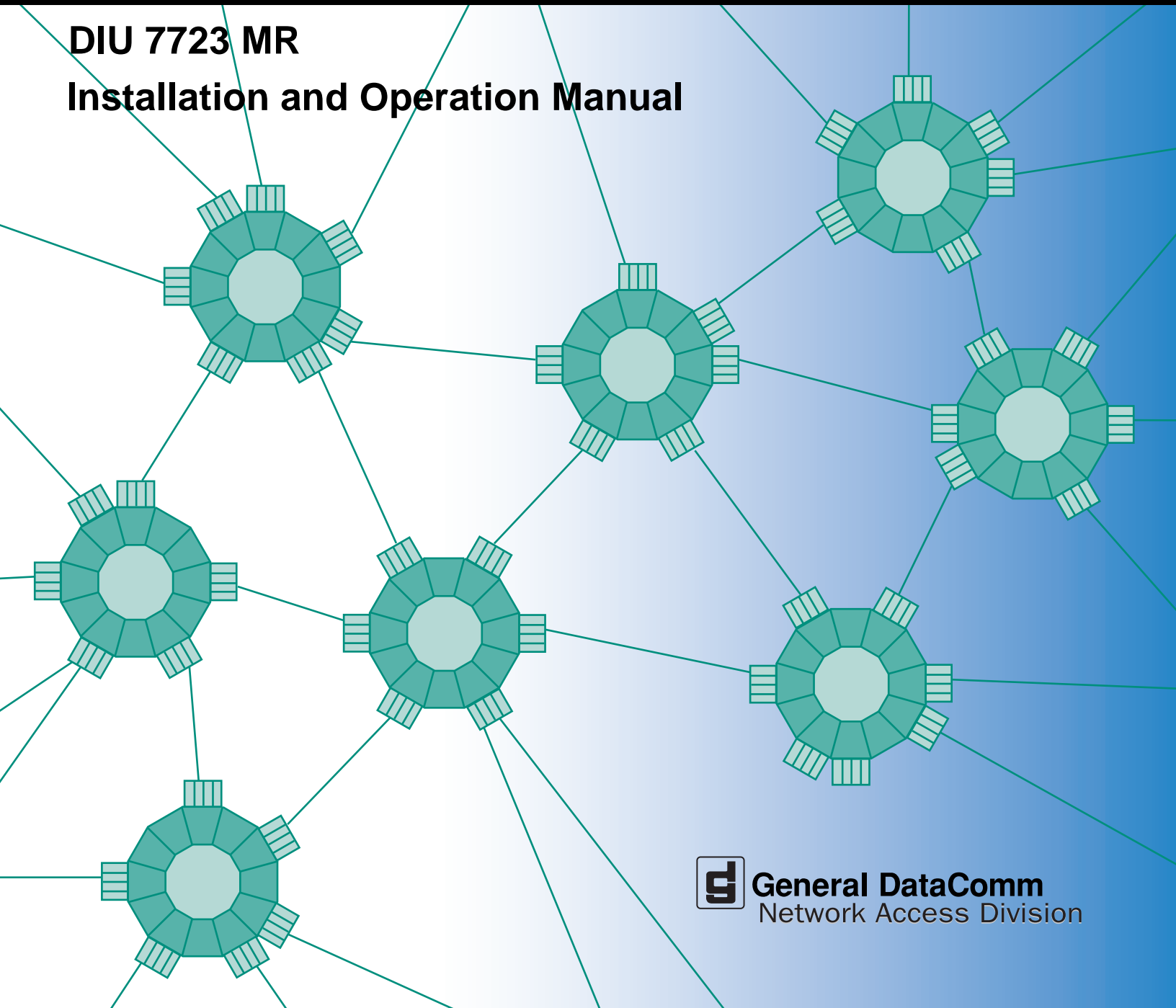
UAS® 7000

DIU 7723 MR
Installation and Operation

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Revision History

Issue Number	Date	Description of Change
01	Dec. '00	First issue.

Related Publications

A listing of related user manuals is provided below. In addition to the hardware and software manuals, always read the software System Release Notes supplied with your product.

Publication Name	Publication Number*
Installation and Operation SpectraComm/UAS Shelf and Enclosure	010R302-REV
Installation and Operation SpectraComm Manager Card	048R303-REV
Installation and Operation NIU Cards	087R702-REV
Installation and Operation DIU Cards	087R703-REV
Installation and Operation 7022	087R714
UAS 7000 for UNIX	087R705-VREV
UAS TEAM 7700 for UNIX	087R709-VREV

* For publications numbers, **REV** is the hardware manual revision (for example, -000, -001, etc.)
VREF (if listed) is the software revision (for example, -V120 would read, Version 1.2) and corresponds to the most current revision.

Preface

This manual describes how to install and operate the General DataComm UAS DIU 7723 MR. The information contained in this manual has been carefully checked and is believed to be entirely reliable. However, as General DataComm improves the reliability, function, and design of their products, is possible that information may not be current. Contact General DataComm if you require updated information for this or any other General DataComm product.

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Manual Organization

The on-line (web-based) manual uses active areas which allow you to navigate through portions of the manual by clicking on any *blue* text.

The manual consists of a description of the card (page 1), instructions for use of Local Management Access (page 7), tests (page 37), associated pin-outs (page 40) and a parts list/specifications table (page 42).

TEAM documents are found in "Related Publications" of this manual.

Safety Information

This manual should be read in its entirety and all procedures completely understood before installing or operating the unit. The notes that appear throughout this manual must be read prior to any installation or operating procedure. Examples of notes used in this manual are shown below.

Note   *A note provides essential operating information not readily apparent which you should be particularly aware of. A note is typically used as a suggestion.*

Important   *Indicates an emphasized note. It is something you should be particularly aware of; something not readily apparent. Important is typically used to prevent equipment damage.*

Precautions

The CAUTION, WARNING, and DANGER statements that appear throughout this manual are intended to provide critical information for the safety of both the service engineer and operator. These statements also enhance equipment reliability. The following definitions and symbols for CAUTION, WARNING, and DANGER as they are used in this manual comply with ANSI Z535.2, American National Standard for Environmental and Facility Safety Signs, and ANSI Z535.4, Product Safety Signs and Labels, issued by the American National Standards Institute.

CAUTION *Indicates a potentially hazardous situation which, if not avoided, may result in minor to moderate injury. It may also be used to alert against unsafe practices.*

WARNING *indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.*

DANGER *indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.*

Safety Guidelines

Always use the following guidelines when unsafe conditions exist or when potentially hazardous voltages are present:

• Always use caution and common sense.

• Repairs must be performed by qualified service personnel only.

• To reduce the risk of electrical shock, do not operate equipment with the cover removed.

• 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.

• Never install telephone wiring during an electrical storm.

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. This product may contain static-sensitive devices that are easily damaged. Proper handling, grounding and precautionary ESD measures are essential when installing parts or cards. Keep parts and cards in antistatic packaging when not in use or during transport. If possible, use antistatic floorpads and workbench pads.

When handling components, 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.

Deutschland

Überblick Sicherheit

Bitte lesen sie dieses Handbuch komplett durch und stellen sie sicher, daß sie alle Vorschriften verstehen, bevor sie das Gerät installieren oder betreiben. Die Hinweise in diesem Handbuch müssen vor Installation oder Betrieb gelesen werden. Beispiele für Hinweise sehen sie hier.

Hinweis | *Ein Hinweis enthält wichtige Informationen zum Betrieb, die nicht auf den ersten Blick ersichtlichsind, und die zu beachten sind. Ein Hinweis dient als Vorschlag.*

Wichtig | *Bedeutet einen besonders wichtigen Hinweis. Darauf sollten sie besonders achten, da dies nicht of-fensichtlich* ist. *Wichtige Hinweise dienen im Allgemeinen dazu, Schäden am Gerät zu vermeiden.*

Die Hinweise CAUTION (VORSICHT), WARNING (WARNUNG) und DANGER (GEFAHR), welche im Handbuch erscheinen, enthalten entscheidende Informationen für die Sicherheit sowohl des Servicepersonals als auch der Bediener. Diese Hinweise erhöhen die Zuverlässigkeit der Anlage. Die folgenden Definitionen und Symbole für VORSICHT, WARNUNG und GEFAHR, wie sie in diesem Handbuch auftreten, sind gemäß ANSI Z535.2, Amerikanischer Nationaler Standard für Sicherheitszeichen für Umwelt und Anlagen, und ANSI Z535.4, Produkt-Sicherheits-Zeichen und Beschriftungen, ausgegeben vom American National Standards Institute.

VORSICHT *bedeutet eine potentiell gefährliche Situation, die wenn sie nicht vermieden wird, zu leichten oder mittelschweren Verletzungen führen kann.*

WARNUNG *bedeutet eine drohende gefährliche Situation, die wenn sie nicht vermieden wird, zu schweren Verletzungen oder zum Tode führen kann.*

GEFAHR *bedeutet eine drohende gefährliche Situation, die wenn sie nicht vermieden wird, zwangsläufig zu schweren Verletzungen oder zum Tode führt.*

Sicherheitsrichtlinien

Unter normalen Umständen arbeitet die Anlage sicher und zuverlässig in ihrem Netzwerk. Falsche Handhabung oder Installation von Bestandteilen kann zu Ausfällen oder Gefahren für den Bediener führen. Seien sie vorsichtig und beachten sie die allgemeinen Regeln bei der Installation der Netzwerkkabel. Beachten sie die folgenden Hinweise, besonders bei unsicheren Umständen oder potentiell gefährlichen Spannungen:

• Reparaturen dürfen nur von qualifiziertem Servicepersonal ausgeführt werden.

• Zur Vermeidung elektrischer Schläge darf die Anlage nicht mit geöffneter Abdeckung betrieben werden.

• Niemals Netzwerkstecker in feuchter Umgebung installieren, es sei denn der Stecker ist dafür ausgelegt.

• Niemals unisolierte Netzwerkdrähte oder Klemmen berühren, es sei denn das Netwerk ist am Interface abgeschaltet.

• Niemals Netzwerk bei elektrischem Gewitter verdrahten.

EC Declaration of Conformity

We: General DataComm Limited
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On behalf of: General DataComm Inc.
                1579 Straits Turnpike
                Middlebury, CT 06762-1299, U.S.A.

The products to which this declaration relates are in conformity with the following relevant harmonized standards, the reference numbers of which have been published in the Official Journal of the European Communities.

Electromagnetic Compatibility

EN 55022: 1994

Specification for limits and methods of measurement of radio interference characteristics of information technology equipment.

EN 50082-1: 1992

Generic immunity standard Part 1 Residential, Commercial, and Light Industry.

Safety

EN 60950: 1997 A1 through A11

Low Voltage Directive relating to electrical equipment designed for use within certain voltage limits.

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Table of Contents

UAS DIU 7723 MR

The UAS Drop-side Interface Unit 7723 Multi-Rate (7723 MR) is the Symmetric Digital Subscriber Line interface to the SpectraComm/UAS Shelf backplane. The 7723 MR is the two-port DIU (two copper-wire loops) of the UAS 7001, 7002 or 7022 Network Interface Units. Each SDSL loop has a bandwidth of Nx64 kbps for user data with N = 2 to 12 with a variable data rate up to 768 kbps per loop. The 7723 MR is intended for use on T1 or E1 uplinks and with General DataComm GT Multi-Rate series remote units. Figure 1 illustrates a typical deployment of the unit.

The UAS 7723 MR is fully network managed by the shelf resident SpectraComm Manager (SCM) Card and an associated SNMP manager. You may also control the UAS 7723 MR using Craft screens via a Telnet connection to the SCM, as described later in this document.

Features and Benefits of the 7723 MR

- Supports line performance reporting.

- Compliant with TS 101524 SDSL framing and electrical specifications.

- SNMP managed via SCM Card and the shelf backplane management bus.

- Data loopbacks for diagnostic testing.

- Front panel LED indicators display operating status.

- Internal test pattern generator and checker provides diagnostic data for testing of SDSL loops.

- Selection of alarm thresholds and reporting status.

- Network managed Major and Minor Alarms with use of the optional Alarm Card.

- Supports Autodiscovery of remote units for the network manager.

- Supports management access of the remotes via the Embedded Operations Channel (EOC).

- Downline loadable Firmware.

- Supports the T1 or E1 uplink.

- Stores a copy of configuration in SCM for autoloading a 7723 MR replacement unit.
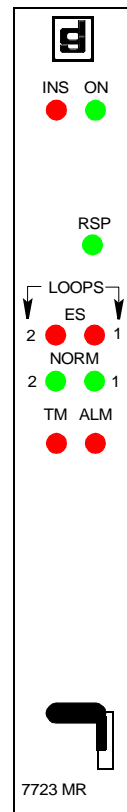
Typical Deployments of the 7723 MR

Central Site   **Remote Location**
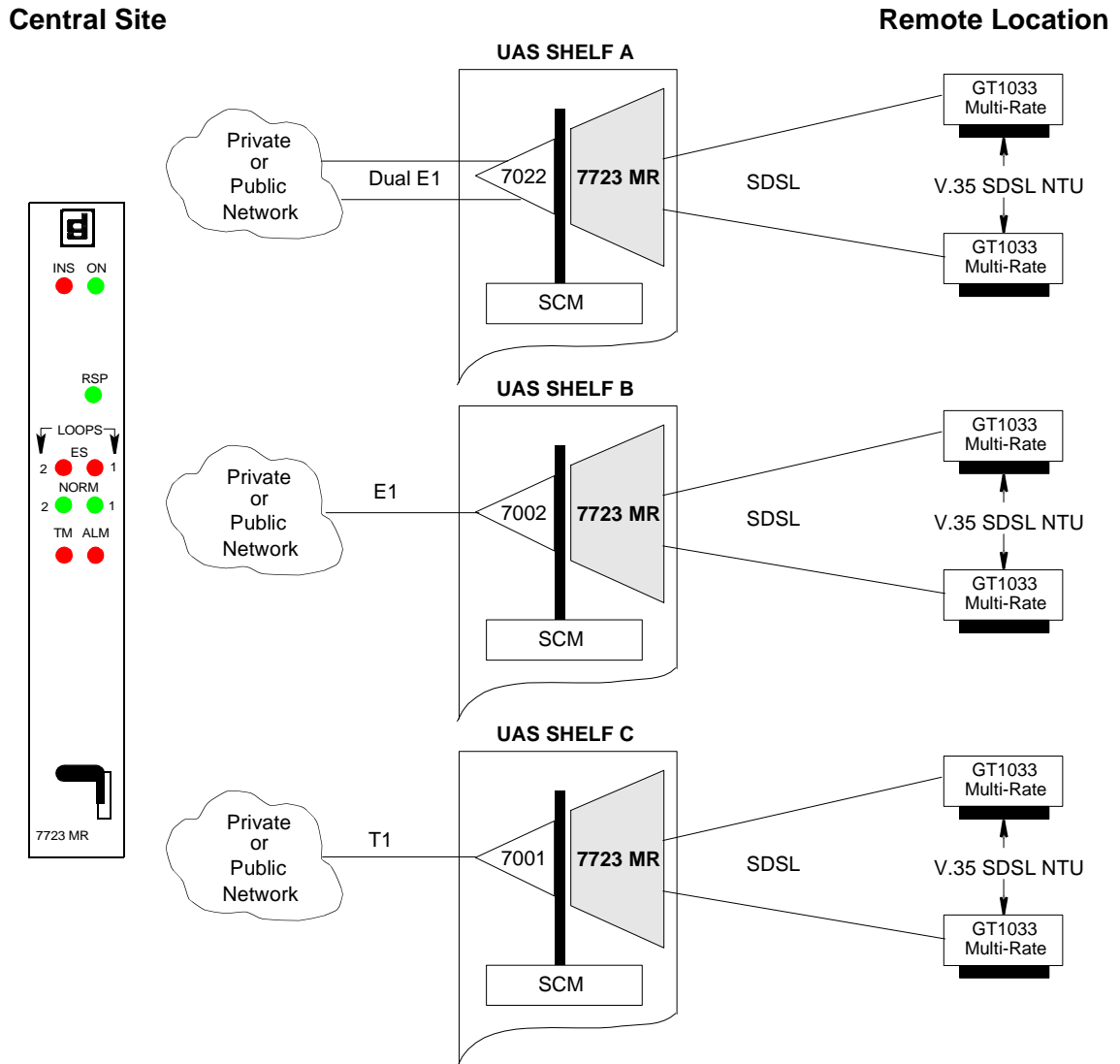

Figure 1   DIU 7723 MR - Typical Data Traffic

Note   *The example network above illustrates typical E1 and a T1 deployments of UAS 7723 MR units with their associated NIUs (7022, 7002 or 7001) and in their respective shelves: A, B or C.*

Note that the 7022 and the 7002 NIUs can reside in the same shelf, but neither can share a shelf with a 7001 NIU.

Parts List and Specifications

The following table describes the physical, operational, and environmental specifications for the DIU 7723 MR. Conforming to these specifications ensures maximum system performance and reduces the chances of mechanical breakdown and personnel hazard.

Table 1   Parts List and Specifications

Parts List	
087P032-001	DIU 7723 MR module
830-002S-xxx	Amphenol 50-pin male- to-male cable (xxx= 5, 10, 25 and 50 ft. lengths)
Specifications	
Dimensions Height Width Depth Weight	 7.0 in. (178 mm) .81 in. (27 mm) 9.5 in. (241 mm) 1.9 lbs. (0.85 kg)
Power	+ 5 Vdc at 2A (max.) +12 Vdc at 50 mA (max.) -12 Vdc at 50 mA (max.)
Load Number	1.0
Network Management Protocol	SNMP and Telnet
Ambient Temperature operating non-operating	 0 to 50° C -40 to 85° C
Humidity (operating)	5% to 95% (non condensation)
Altitude operating non-operating	 0 to 10,000 feet 0 to 40,000 feet
Operating Mode	Full duplex with adaptive echo cancellation.
Data Format	Synchronous, serial binary.
Line Coding	2B1Q, compatible with ETR 152/BELLCORE 1210.
Line Requirements	4-wire, non-loaded metallic circuit (2 per loop).
Framing	ETSI ETR 152 SDSL Framing.
Impedance	135 ohm twisted pair.

Installing the DIU 7723 MR

There are no hard options on the basecard except for X1 (Figure 2). Install the DIU 7723 MR card in the UAS Shelf following the directions below. Then proceed to cable, power-up and set Soft Optioning (Table 3).

1. Insert the card into its slot with the GDC logo on top, then slide it in until it makes contact with the rear panel connectors.

2. Pull down the insertion/extraction tab on the front panel and firmly push the card in until it seats in the rear connectors.

To remove a card, pull down the front panel insertion/extraction tab to unseat the card, then use tab to remove card.
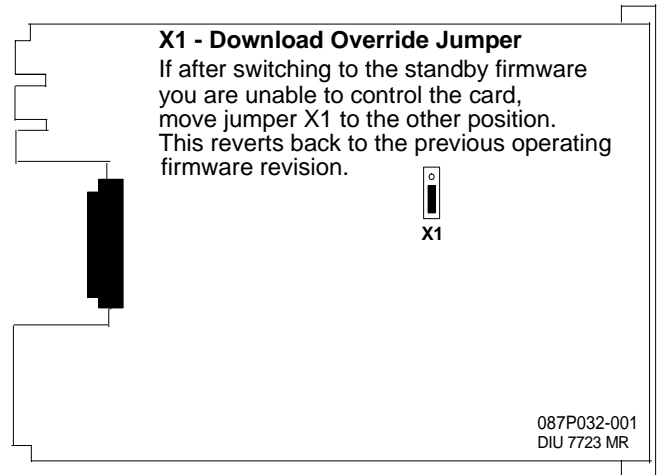
X1 - Download Override Jumper
If after switching to the standby firmware you are unable to control the card, move jumper X1 to the other position. This reverts back to the previous operating firmware revision.

X1

087P032-001
DIU 7723 MR

Figure 2   DIU 7723 MR

Performance Rates and Maximum Distance

GDC has rigorously tested the performance of the UAS DIU 7723 MR, with the results detailed in Table 2.

Table 2   Cable Reach (26 AWG - no noise)

Rate (kbps)	Feet	Meters
128	16,200	4,938
192	15,700	4,785
256	15,400	4,694
384	15,100	4,602
512	14,600	4,450
768	12,900	3,932
1024	12,300	3,749
1536	11,600	3,536

Cabling and Powering-Up

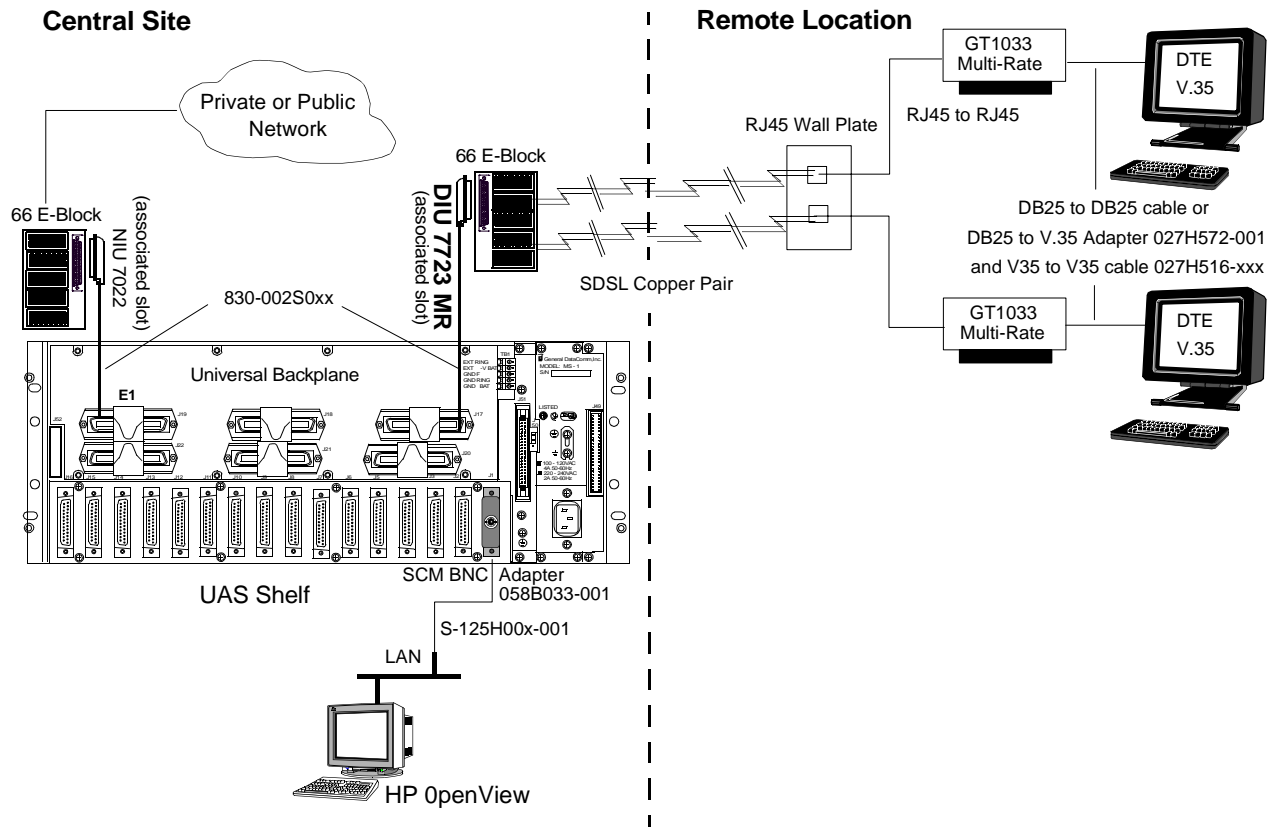Figure 3 shows the cabling of a typical network installation.

Figure 3 DIU 7723 MR Application

After cabling you can proceed with power-up. Once you insert the DIU 7723 MR into a powered system (or when you first power the system up), the card will automatically perform a simple Power-On Self-Test (POST). This test allows you to check the front panel LEDs (refer to Figure 4) by turning them ON and OFF in unison for approximately 2 seconds; and it checks the card's RAM. If the RAM check fails, the ALM LED flashes continuously and all the other LED's remain OFF.

Front Panel Indicators

Figure 4 shows the front panel of the DIU 7723 MR and describes the indicators.

| LED	Use
INS (green)	In Service This LED is ON when the card is transmitting and receiving data on the system data bus and the SDSL line.
ON (green)	Power ON This LED is ON when you apply power.
RSP (green)	Management Response. Flashes when the card is responding to a management request.
ES (red)	Error Second Flashes when errors are detected in the SDSL receive data. It is solid ON when there is a loss of signal or loss of sync. During startup, it is ON when there is no response from the mating unit; it is OFF when signal from the mating unit is received. There is an individual ES LED for each loop.
NORM (green)	Normal Operation This LED is ON solid when the SDSL loop is active and ready to pass data. It flashes when the loop is handshaking with the remote unit. It is OFF when loss of signal is detected on the SDSL loop. There is an individual NORM LED for each loop.
TM (red)	Test Mode Lights during a loop diagnostic test mode. One LED provides indication for both loops.
ALM (red)	Alarm Flashes during an alarm condition. One LED provides indication for both loops.
Note: All LEDs are ON for approximately 2 seconds after power has been applied to the card or after the card has undergone reset.	
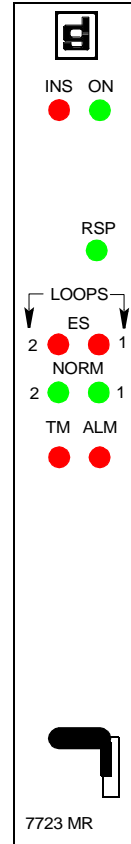
Figure 4   DIU 7723 MR Front Panel

Local Management Access

Overview

Local access to the terminal interface requires an SCM card when the 7723 MR is installed in a SpectraComm shelf. The SCM card supports two types of connection for terminal interface functions:

- Connection of a VT100-compatible terminal via the CTRL port on the SCM front panel.

- Telnet connection via the SCM (from the shelf's rear panel slot associated with the SCM Card).

Initiating a Terminal Interface Session

The first portion of a terminal interface session varies depending on whether or not an SCM card is being used. If you are using an SCM card, the procedure also varies depending on whether you use a VT100-compatible terminal connected directly to the SCM front panel or a computer with a Telnet connection to the SCM LAN port.

The terminal communications parameters must be set as follows:

1. data rate = 9600 bps

2. character format =1 start bit

        8 data bits

        no parity

        1 stop bit

VT100-compatible Terminal Connected to SCM Card Front Panel

When you connect a VT100 terminal to the SCM front panel CTRL jack, and after you enter `Element Access`, the screen displays the Shelf Inventory screen (Figure 5.)

Telnet to SCM

When you Telnet to the SCM, and after you enter the login password (the default password is `scmadmin`) the Telnet login screen displays the shelf inventory, Figure 5,.

Note   *There is a 10-minute time-out on the terminal interface. If you allow 10 minutes to pass with no activity, that is without pressing any key on the keyboard, the unit terminates the session. At that point the display returns to the SCM login screen.*

Device Selection (Shelf Inventory Screen)

The first element access screen is the Shelf Inventory, which lists all devices installed in the same shelf (or pair of shelves) that houses the SCM. Figure 5, shows a two-shelf UAS 7000 installation.

The two columns for Slots 17 through 32 do not appear in the Shelf Inventory display when there is only one shelf.

```
                    SHELF  INVENTORY
  Slot  Card            Slot  Card
 ------------------------------------------------
  [1]SCM               [17]UAS7616
  [2]UAS7616           [18]UAS7616
  [3]UAS7616           [19]UAS7616
  [4]UAS7616           [20]UAS7022
  [5]UAS7616           [21]UAS7022
  [6]UAS7616           [22]UAS7626
  [7]UAS7616           [23]UAS7626
  [8]UAS7616           [24]UAS7723 MR
  [9]UAS7616           [25]UAS7723 MR
 [10]UAS7616           [26]
 [11]UAS7616           [27]
 [12]UAS7616           [28]
 [13]UAS7616           [29]
 [14]UAS7616           [30]
 [15]UAS7616 (alarm)   [31]
 [16]UAS7616           [32]


  [0]Close Session

 Enter slot number:  [   ]
```

Figure 5   Shelf Inventory Screen

The Shelf Inventory displays the word "alarm" in parentheses next to the name of any unit that currently has an active alarm condition. It displays a + sign next to the slot number of a DIU when the unit has a dedicated remote.

Enter the slot number of the unit you intend to work with, and press Enter. If you have selected an NIU, an LIU, or a DIU with no dedicated remotes, the unit responds by displaying the Main Menu screen for the unit you are accessing. The following paragraphs explain how to use that menu and the screens that you can access through it.

If you select a DIU that does have one or more dedicated remotes, the unit responds by displaying the Drop Inventory screen.

Drop Inventory Screen

The Drop Inventory screen (Figure 6) is included in the terminal interface process when you access a DIU having a dedicated remote associated with it. A + sign appears next to the DIU's Shelf Inventory slot number when there is a dedicated remote.

The Drop Inventory screen is generated dynamically, so its appearance depends on what type of DIU is selected and what its remote connections are. The display can show as many as seven selections:

> Drop 0 is always the DIU itself; select it to access the terminal interface screens for the master unit installed in the UAS 7000 shelf

> Drops 1, 2, 3, 4, 5, and 6 display the unit types of their corresponding dedicated remotes

Because this screen is dynamic, its appearance is not always the same. If, for example, there is only one dedicated remote and it is linked to the DIU's first DSL, the screen shows only two drops: 0, the DIU, and 1, the remote. However, if the single dedicated remote is linked to the DIU's third DSL, the screen shows drops 0 through 3 with the remote as drop 3 and blank lines for drops 1 and 2.

The screen displays (alarm) next to the card name if there is an alarm condition.

The [D] Delete Remote selection results in an on-screen prompt Enter drop of remote to delete: Type the appropriate number and press Enter. The [D] selection disappears from the screen when all remotes are deleted. Also, if you delete all remotes, the Drop Inventory screen itself stops existing after you leave the screen by selecting 0 or S.

```
                  SLOT 12:   DROP INVENTORY

 Drop       Card
-----------------------------------
  [0] MASTER UAS7723 MR
  [1] REMOTE GT1033MR

  [S] Go To -> Shelf Inventory        [D] Delete Remote

  Enter drop:



```

Figure 6   Drop Inventory

Note   *The* [1] REMOTE GT1033MR *selection can only be managed by TEAM.*

Main Menu

The Main Menu screen, shown in <u>Figure 7</u>, is the access point to the individual terminal interface functions. It contains the following selections:

- Configuration – accesses a menu with two entries: Configuration and Alarms

- Diagnostics – provides access to the functions by which you can select, start, and stop diagnostic loopbacks

- Alarm Monitor – accesses the display screens for viewing alarm conditions

- Performance Statistics – accesses a menu of display screens, two for each of the two loops the DIU supports

- Maintenance – accesses the screen by which you can perform reset functions and from which you can access the firmware download function

To access a function from the Main Menu, type the selection number that corresponds to it and press Enter. The following pages describe the individual terminal interface functions in detail.

```
                   UAS 7723 MR Main Menu


 General DataComm Ind. Inc.


 Serial Number:              0122090102030405
 Firmware Rev.:              --
 Shelf Slot   :              12

 [1] Configuration
 [2] Diagnostics
 [3] Alarm Monitor
 [4] Performance Statistics
 [5] Maintenance




 [0] Return to Shelf Inventory

 Select: [ ]
```

Figure 7   Main Menu

Configuration

The UAS 7723 MR Configuration menu screen shown in <u>Figure 8</u> appears when you type 1 to invoke the Configuration function from the Main Menu. It contains the following selections:

• Configuration – for setting operating characteristics, including how the unit exchanges data with its NIU

• Alarm Configuration – for selecting what alarms get reported as SNMP traps

To access a configuration function, type the selection number that corresponds to it and press Enter. Complete descriptions of the individual configuration functions appear on the following pages.

Note   *When you configure a group of UAS DIUs to operate with NIUs or LIUs it is vital to coordinate their Highway and DS0 assignments. All the DIUs must be assigned to the same Highway and no DS0 can be assigned to more than one DIU. You must also consider how DS0 assignments are affected by the data rates that you set in Unit Configuration.*

```
                    UAS 7723 MR Configuration


   [1] Unit Configuration
   [2] Alarm Configuration

















   [0] Return to Main Menu    [CR] Return to previous Menu

   Select: [ ]
```

Figure 8   Configuration Menu

Note   *The SCM card can store a copy of the UAS 7723 MR unit's configuration for automatic loading into a replacement 7723 MR. If a 7723 MR is replaced by another 7723 MR in the same slot, the SCM card automatically configures the new 7723 MR with the Unit Configuration, and Alarm Configuration option settings that were in effect for the old 7723 MR. To change settings for the replacement unit, you must exit the element access screen.*

Unit Configuration

The UAS 7723 MR Unit Configuration screen shown in Figure 9 presents a screen of configuration options for setting the operating speeds, and the highway and timeslot (DS0) assignments of the two loops that the unit can support.

The two on-screen selection numbers are each associated with a row of current setting entry fields for one loop. *Table 3*, which follows the figure, lists the settings available for each option. The table is followed by the procedure for setting options and saving the configuration settings.

The five display fields at the top right of the screen are fixed values.

The individual loops of a DIU can be directed to different highways and LIUs.

```
              UAS 7723 MR Unit Configuration

 Unit:
 Network:                         Drop Side
 Module Clk Src:                  System

 Interface:
 Termination Type:                Line
 Tx Clk Src:                      System
 SDSL Provisioning:               P2MP


     Loop    Data Rate    Highway      Starting DS0   TS 16
 [1] Loop 1   384K         Disabled          NA          Used
 [2] Loop 2   384K         Disabled          NA          Used




 [0] Return to Main Menu    [S] Save    [CR] Return to previous
Menu

 Select: [ ]
```

Figure 9   Unit Configuration Screen

Table 3   Unit Configuration Option Settings

Option	Function/Potential Settings			
Loop	Data Rate	Highway	Starting Timeslot	TS 16
[1] Loop 1 [2] Loop 2	Disabled Data rates for each loop: 128K 192K 256K 320K **384K (Default)** 448K 512K 576K 640K 704K 768K	One Two Three Four Five Six Seven Eight **Disabled (Default)** Selects which backplane data highway the DIU employs to exchange loop data with the NIU. Set to Disable when the loop is not used	1 – 31 **1 (Default)** Selects which timeslot (DS0) in the selected backplane data highway starts the group of timeslots the DIU employs to exchange data with the NIU. Set to NA when the loop is not used.	Skipped **(Default)** Used
[0] Return to Main Menu				
[S] Save				
[CR]Return to Previous Menu:				
Note: When you select the desired data rate, both loop 1 and loop 2 display the same rate - Loop 1 and loop 2 must operate at the same data rate. When using the UAS 7002 only highways 1-4 are valid.				

The Unit Configuration procedure involves the following steps:

1. From the Configuration menu, select the Unit Configuration screen by typing 1 and pressing the Enter key.

2. Type the selection number of the loop you intend to configure and press Enter. Highlighting appears on the Data Rate current setting field for the selected loop.

3. Use the up and down arrow keys to toggle the highlighted field through its potential settings, or use the right and left arrow keys to shift the highlighting to one of the row's other current setting fields.

4. When the three fields in the selected row display the desired settings, press Enter. The highlighting disappears and the cursor returns to the Select field at the bottom of the screen.

5. Repeat steps 2 through 4 for each loop you need to configure. Remember to allow for the number of timeslots needed to support the selected data rate when assigning Starting Timeslot.

6. To put the configuration changes you've made into effect, type S (Save) and press Enter. You may use either upper or lower case for letter responses.

In response, the screen prompts for confirmation:

```
*WARNING - SAVING DISRUPTS COMMUNICATIONS Continue? [ ] Y(es), N(o)
```

7. Continue the save process by typing `Y` and pressing the Enter key, or abort the save by typing `N` and pressing the Enter key.

    If you continue the save, the word `SAVING` is displayed at the bottom of the screen. When it disappears the save is complete and the new settings are in effect.

8. When you're done with Unit Configuration, you may either return to the Configuration Menu screen by pressing the Enter key – identified as `CR` (Carriage Return) in the screen prompt – or return to the Main Menu by typing `0` and pressing the Enter key.

If you start to leave the Unit Configuration screen while there are unsaved changes, the screen displays

```
*WARNING - EXITING WITHOUT SAVING CHANGES  Continue? [ ] Y(es), N(o)
```

You can type `N` and press the Enter key to keep the Unit Configuration screen on display while you perform a save, or you can type `Y` and press the Enter key to finish exiting. Unsaved changes are lost if you exit without performing a save.

Alarm Configuration

Selection 2, Alarm Configuration, from the UAS 7723 MR Configuration menu calls up the UAS 7723 MR Alarm Configuration Submenu shown in Figure 10. From that submenu you can select the loop for which you intend to perform alarm configuration.

```
                 UAS 7723 MR Alarm Configuration



 [1] Loop 1 Alarm Configuration
 [2] Loop 2 Alarm Configuration













 [0] Return to Main Menu      [CR] Return to previous Menu


 Select: [ ]
```

Figure 10   Alarm Configuration Menu Screen

Each Alarm Configuration Submenu enables you to designate which alarms are to be reported by means of SNMP traps when they occur on the loop, and which are to be masked (not reported). It also contains the selections for setting thresholds for Bit Error Rate (BER) alarms on the loop. Figure 11 illustrates the screen for Loop1; the two Alarm Configuration screens are identical.

Masking applies only to the SNMP alarm reporting function. The terminal interface Monitor/ Alarms function always displays the actual status of alarm conditions. The alarm configuration procedure appears following the figures.

```
            UAS 7723 MR Alarm Configuration - Loop 1


  Alarm Masks:

 [1] Loss of Signal        : Masked
 [2] Loss of Sync Word     : Masked
 [3] Errored Seconds       : Masked
 [4] Unavailable Seconds   : Masked
 [5] Major BER             : Masked
 [6] Minor BER             : Masked
 [7] All Alarms Control    : Masked




  Alarm Thresholds:

 [8] Major BER           : 10E-4
 [9] Minor BER           : 10E-8


 [0] Return to Main Menu[S] Save   [CR] Return to previous Menu


  Select: [ ]
```

Figure 11   Alarm Masks Configuration Screen

Each Alarm Configuration Submenu lists all the alarms that the 7723 MR can report on a loop. Consult the description of the Monitor/Alarm screen (Figure 18 and following paragraphs) for definitions of the alarm conditions.

The unit evaluates most alarm conditions simply on the basis of whether or not the condition exists. If the alarm condition exists, the unit displays it as ACTIVE on the Alarm Monitor terminal interface screen and generates an SNMP trap to report it if it isn't masked.

The two alarm conditions that the unit evaluates by means of a threshold value are the Major and Minor Bit Error Rate (BER) alarms. You can set each alarm to occur in response to an error rate of one error in 10,000, 100,000, 1,000,000, 10,000,000 or 100,000,000 data bits. The on-screen entry fields display those rates as 10E-4, 10E-5, 10E-6, 10E-7, and 10E-8.

Typically, you should configure the Minor BER alarm to occur at a lower error rate so it can serve as an early warning signal, and configure the Major BER alarm to occur at an error rate that seriously impacts operations. The threshold values you configure for BER alarms govern both SNMP reporting and terminal interface display.

The alarm configuration procedure involves the following steps:

1. From the Alarm Configuration Submenu screen, select the number of the loop for which you intend to perform alarm configuration and press Enter. In response the selected Alarm Configuration Submenu screen is displayed.

    You may want to begin by using the [7] All Alarms Control command to set all alarms Reported or all alarms Masked, depending on how you intend to set the majority of the alarm options. If you intend to change only selected items, go to step 4.

2. To use All Alarms Control, type 7 and press Enter. In response, highlighting appears on the All Alarms Control current setting field. Before it's highlighted the field can display one three values: Masked, Reported, or Mixed. Masked and Reported are the values to which you can set the field; Mixed is a display-only setting that the unit itself writes to the field when it is appropriate. If Mixed is displayed before you select the option, it disappears the first time you toggle the field.

3. Use the arrow keys to toggle between the two potential settings, Masked and Reported, and press the Enter key when the field displays your selected setting. The current setting fields for all the individual alarms change to match your selection.

    Go to step 8 if you don't need to change any of the individual alarm options. If you do need to change individual options, follow steps 4 through 7.

4. Type the selection number of the option you intend to change and press Enter. Highlighting appears on the current setting field for the corresponding option.

5. Use the arrow keys to toggle the highlighted field through its two potential settings, Masked and Reported.

6. When the field displays the desired setting, press Enter. The highlight returns to the Select field. The All Alarms Control field displays Mixed when changes result in a mixture of Masked and Reported settings.

7. Repeat steps 4 – 6 for each option you need to change.

8. If you need to make adjustments to the loop's BER alarm thresholds, type the appropriate selection number, 8 or 9, and press Enter. Highlighting appears on the corresponding current setting field.

9. Use the arrow keys to toggle the highlighted field through its potential settings: 10E-4, 10E-5, 10E-6. 10E-7, or 10E-8 (10E-4 is the default for Major BER, 10E-8 is the default for Minor BER). Press the Enter key when the selected setting is displayed.

10. Repeat steps 8 – 9 for each BER alarm you are configuring to be Reported.

11. After you've made all required changes and you are certain they are correct, type S and press the Enter key to save your configuration changes. You may use either upper or lower case for letter responses. Then press the Enter key a second time, to return to the Alarm Configuration Submenu screen.

    If you start to leave the Alarm Configuration screen while there are unsaved changes, the screen displays

    *WARNING - EXITING WITHOUT SAVING CHANGES   Continue? [ ] Y(es), N(o)

    You can type N and press the Enter key to keep the screen on display while you perform a save, or you can type Y and press the Enter key to finish exiting. Unsaved changes are lost if you exit without performing a save.

12. To dismiss the Alarm Configuration Submenu screen, type selection 0, Return to Main Menu, and press Enter.

Current Service State

The Current Service States screen, which you access through the SCM Backplane Control menu, is the only SCM Backplane Control function that applies to the operation of a UAS 7000 system. You need to use this function after you install a unit or reset it to factory defaults.

To change the service state of a UAS 7723 MR DIU:

1. Go to the Shelf Inventory screen.

2. Select the SCM by typing its slot number and pressing the Enter key.

   The SCM responds by displaying the Main SCM Menu.

3. Type 8 and press the Enter key to select Backplane Control.

   The SCM responds by displaying the Backplane Control menu.

4. Type 3 and press the Enter key to select Service States.

   The SCM responds by displaying the Current Service States screen, shown in .

```
                 CURRENT SERVICE STATES
                 --- Line Number ---

 Slot     Card      1      2      3      4
  [1] SCM         Up
  [2] UAS7002     Down
  [3] UAS7723 MR Down
  [4] UAS7723 MR Down
  [5] UAS7723 MR Down
  [6] UAS7723 MR Down
  [7] UAS7002     Up
  [8] UAS7723 MR Up
  [9] UAS7723 MR Up
 [10] UAS7723 MR Up
 [11] UAS7723 MR Up
 [12]
 [13]
 [14]
 [15]
 [16]

 [0] Go To -> Backplane Control  [A] All Up  [D] All Down

  Enter 0, A, D or Slot Number:
```

Figure 12   SCM Current Service States Screen

5. Type the slot number that corresponds to the unit you're working with and press Enter.

    The SCM responds by displaying

    ```
            SLOT 5 UAS7723 MR DESIRED SERVICE STATE
    [G] Go To -> Service States
    [1] Line 1: Request Service State Up
    ```

    If the current state of the unit were Up, selection 1 would read `Request Service State Down`.

6. Type 1 and press Enter.

    The SCM responds by displaying a message that it is polling the shelf, and then returns to the Current Service States screen. If the operation succeeded the new state is displayed for the unit.

    If the state is still Down after a command to go into service, it indicates the unit is not configured correctly to go into service.

7. Exit from the SCM card terminal interface functions by typing 0 and pressing the Enter key at each screen until the Shelf Inventory screen is displayed.

Diagnostics

Selecting Diagnostics from the UAS 7723 MR main menu calls up a submenu, shown in Figure 13, for selecting the loop on which you intend to perform tests. The terminal interface provides a separate Diagnostics screen for each loop supported by the UAS 7723 MR DIU. The Diagnostics screen is shown in Figure 14.

The unit supports two tests for each loop: DigitalLoop and RemoteLoop. Table 4 describes the options. (Refer to Test section for details).

```
                  UAS 7723 MR Diagnostics

 [1] Loop 1 Diagnostic Tests
 [2] Loop 2 Diagnostic Tests
 [3] SDSL Status













 [0] Return to Main Menu        [CR] Return to previous Menu

 Select: [ ]
```

Figure 13   UAS 7723 MR Diagnostics Submenu Screen

```
                    UAS 7723 Diagnostics - Loop 1


 [1] BERT:                    Inhibit
 [2] LoopBack:                Terminate



 Bit Errors:
 Bit Error Rate:
 Status:

 Test Interval:







 [0] Return to Main Menu  [S] Save   [CR] Return to previous Menu

 Select: [ ]
```

Figure 14   UAS 7723 MR Diagnostics Screen

Table 4   Diagnostic Option Settings

Option	Potential Settings
[1] BERT:	Inhibit Reset BER Meter Enable
[2] Loopback:	Digital Loop Terminate Remote Loop
[0] Return to Main Menu	Returns you to the UAS 7723 MR Main Menu.
[S] Save	Starts or stops loopback by saving current settings
[CR] Return to previous menu	Returns you to the previous menu
Select [ ]	Selects choice

BERT Testing Method

BERT testing is performed by repeatedly transmitting a pseudo test sequence, having a length of 2^{-15}-1 bits, and then comparing it with the received sequence through an error detector. Any differences are assumed to be errors, which are then counted. To do a meaningful comparison, the error counting is inhibited until the error detector becomes synchronized with the incoming sequence. During this synchronization, it is possible to see a burst of 255 errors.

During this testing, user traffic is disconnected. BER tests may be performed in an end-to-end mode, requiring both LTU and NTU BER testers to be on. If testing is initiated at one end, a loopback along the signal path needs to be connected. The loopback can be a physical connection made somewhere along the signal path, or it can be a test loopback activated at the desired location as described in the LOOPBACKS section of this manual. Alternatively, an external BERT may be connected to the remote unit to facilitate testing.

Measurements are carried out over discrete intervals (an interval corresponds to the time required for the transmission of a block of 2^{21} bits). The number of errors that are counted in each interval can be as many as 255. If the actual number of errors for a given interval is higher, only this 255 maximum count is considered in the BER calculation. The calculated BER is updated at the end of each interval.

The bit-error rate test can be done over one SDSL loop or both simultaneously.

The BERT test can be invoked through the GDC UAS TEAM controller, a SCM craft port, or a front panel switch.

Front panel TM LED illuminates when the BERT test is activated. When the error detector is in sync and detects no errors, the TM led is constant. If, however, the error detector is not in sync or detects some errors, the TM LED blinks. See Figure 15 which shows the self-tests.
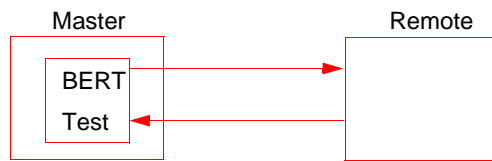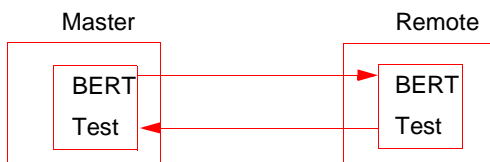
Master Self-Test:
Enable Master BERT test. Be sure you have an external loopback
or test equipment at the remote unit to facilitate this test.
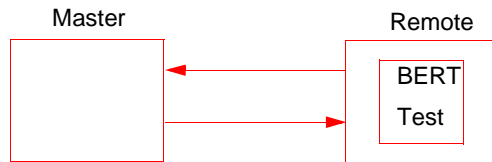
Remote Self-Test:
Enable Remote BERT test. Be sure you have an external loopback
or test equipment at the master unit to facilitate this test.
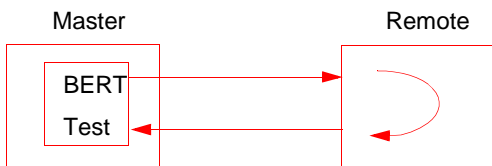
Self-Test with Remote Loopback:
From Master unit, assert Remote Loopback (RL) (activated via the
SCM craft port or UAS manager) and enable BERT test.

End-to-End Self-Test:
Enable BERT test on both Master and Remote unit.

Figure 15   Test Configuration

Table 5   BERT Test Screen Fields

Field	Displays
Status	Status of the error detector: `Sync` - error detector is synchronized, and the BERT measurement is possible; `Out-of-Sync` - error detector is not synchronized, and BERT measurement is inhibited.
Errors	Number of errors counted up to this point.
Intervals	Number of measurement intervals up to this point.
Bert	BERT calculated up to this point.

Activating a BERT Test

1. From main screen select [2] Diagnostics

2. From Diagnostic screen select the appropriate loop [1] Loop 1 Diagnostic Tests or [2] Loop 2 Diagnostic Tests.

3. From Diagnostic loop screen select `[1] BERT`

4. Use the up/down arrow keys to select `Enable` then hit Enter.

5. Type `S` to activate diagnostic BERT Test

Screen will display ***WARNING-SAVING DISRUPTS COMMUNICATIONS** Continue? [ ]

Y (es), N(o)

6. Select `Y` to continue with BERT Test or select `Inhibit` then hit Enter.

7. To Deactivate BERT Test select `[1] BERT`.

8. Use the up/down arrow keys to select `Inhibit` then hit Enter.

Type `S` to deactivate diagnostic BERT Test.

Screen will display **`*WARNING-SAVING DISRUPTS COMMUNICATIONS`** `Continue? [ ]`

Y(es), N(o) select `Y` to continue with deactivation of BERT Test or select `N` continue Bert Test.

Diagnostic Testing Method

1. From the Main Menu, select the Diagnostics function by typing `2` and pressing the Enter key. In response the screen displays the Diagnostics submenu, listing Loops 1 – 2 and SDL Status.

2. Type the number of the loop on which you intend to perform tests and press Enter. In response the screen displays the Diagnostics screen for the selected loop test and BERT test.

3. To select a test to be performed, type the appropriate selection number and press Enter. Highlighting appears on the current setting field.

4. Use the arrow keys to toggle the highlighted field from `Terminate` to `RemoteLoop` to `DigitalLoop`.

5. When the field displays the appropriate test, press Enter. The highlighting disappears and the field displays the new setting.

6. To start the test, type S (Save) and press Enter.

   In response, the screen prompts for confirmation:

   ```
   *WARNING - SAVING DISRUPTS COMMUNICATIONS  Continue? [ ] Y(es), N(o)
   ```

7. To perform the test type `Y` and press the Enter key; to abort the test type `N` and press Enter.

   If you continue, the word `SAVING` appears at the bottom of the screen. When it disappears the test is in effect. It continues until you end it manually.

   If you are performing a BERT diagnostic, the `Bit Errors` field will display the number of errors which occurred during the test.

8. To end a test, type its selection number and press Enter. Toggle the highlighted field to `Terminate` and press Enter. Save the setting as described in steps 6 and 7.

9. When you're done with the Diagnostics screen, type 0 and press the Enter key to return to the Main Menu; or press the Enter key to return to the Diagnostics submenu.

Note   *You can perform Digital Loop or Remote Loop tests simultaneously on multiple loops in the same DIU.*

Typing 3 at the Main Menu and pressing the Enter key displays the SDSL Status screen. (Figure 16). Table 6 describes the SDSL Status Screen fields. After viewing the status for Loop 1 and 2, type 0 to return to the Main Menu.

```
              UAS 7723 Diagnostics - SDSL Status



                          Loop1        Loop2
                          ------------------
Signal/Noise Margin:      -16.5        -16.5
Pulse Attenuation:         19.0         21.0













   [0] Return to Main Menu        [CR] Return to previous Menu

   Select: [ ]
```

Figure 16   UAS 7723 MR SDSL Status

Table 6   SDSL Status Screen Fields

Signal/Noise Margin*	Displays the noise margin, in decibels (dB), measured by the signal processing circuits of the 7723 MR. Separate values are provided for each SDSL loop.
Pulse Attenuation*	Displays the pulse attenuation, in dB, measured by the signal processing circuits of the 7723 MR. Separate values are provided for each SDSL loop.
*Note:Noise margin and pulse attenuation are valid only when the loop has completed its handshake with the opposite end.	

Alarm Monitor

When you select Alarm Monitor, the screen displays the UAS 7723 MR Alarm Monitor submenu screen shown in Figure 17. This screen provides Alarm/No Alarm indication for each loop; it is also the selection menu for viewing each loop's detailed Alarm Status display.

```
                        UAS 7723 MR Alarm Monitor

 [1] Loop 1 Alarm Status:                 NO ALARM
 [2] Loop 2 Alarm Status:                 NO ALARM














 [0] Return to Main Menu      [CR] Screen Update

 Select: [ ]
```

Figure 17   Alarm Monitor Submenu Screen

If a loop's Alarm Status field on the submenu screen displays Alarm, you should type its selection number and press the Enter key to call up the Alarm Status display. The Alarm Status screen, shown in Figure 18, displays ACTIVE or INACTIVE for each alarm condition to indicate whether or not the condition currently exists. This screen displays alarms regardless of masking performed in Alarm Configuration. Definitions of the alarm conditions appear below.

The screen updates every five seconds so that current information is always displayed. The cursor highlight flickers from field to field on the screen during the brief time required to complete the update.

When you are done viewing the Alarm Status screen, type 0 and press the Enter key to return to the Main Menu; or press the Enter key to return to the Alarm Monitor submenu.

```
              UAS 7723 MR Alarm Status - Loop        1

 Loss of Signal:                          INACTIVE
 Loss of Sync Word:                       INACTIVE
 Errored Seconds:                         INACTIVE
 Unavailable Seconds:                     INACTIVE
 Major BER:                               INACTIVE
 Minor BER:                               INACTIVE

















 [0] Return to Main Menu      [CR] Return to previous Menu

 Select: [ ]
```

Figure 18   Alarm Status Screen

For each loop that the UAS 7723 MR DIU supports, the corresponding Alarm Status screen displays the following group of alarms:

Loss of Signal – The absence of an incoming signal

Loss of Sync Word – Loss of synchronization word on the corresponding loop

Errored Seconds – An Error Second contains at least one CRC error or Out of Frame (OOF) event

Unavailable Seconds – An Unavailable Second is one in which the unit cannot pass data

Major BER – A Major Bit Error Rate alarm occurs when the error rate exceeds the configured threshold limit

Minor BER – A Minor Bit Error Rate alarm occurs when the error rate exceeds the configured threshold limit

In the Alarm Configuration screen you can set the Major and Minor Bit Error Rate (BER) alarms to occur in response to error rates of one error in 10,000, 100,000, 1,000,000, 10,000,000 or 100,000,000 data bits. Typically, you should configure the Minor BER alarm to occur at a lower error rate to serve as an early warning signal, and configure the Major BER alarm to occur at an error rate that seriously impacts operations. The threshold values you configure for BER alarms govern both SNMP reporting and terminal interface display.

Performance Statistics

The Performance screen menu shown in Figure 19 appears when you type 4 to invoke the Performance Statistics function from the Main Menu. From this menu you select the loop for which you intend to view statistics.

```
                    UAS 7723 MR Performance


 [1] Loop 1 Statistics
 [2] Loop 2 Statistics















 [0] Return to Main Menu        [CR] Return to previous Menu


 Select: [ ]
```

Figure 19   Performance Statistics Menu

That selection takes you to the submenu of the three statistics displays the unit supports for each loop, Figure 20. The displays you select from the submenu differ in the period of time that they cover:

```
                      UAS 7723 MR Statistics - Loop 1

   [1] Current Stats
   [2] Interval Stats
   [3] Current 24 hours Stats

















   [0] Return to Main Menu        [CR] Return to previous Menu

   Select: [ ]
```

Figure 20   Statistics Submenu

- Current Stats – uncompleted 15-minute interval on which information is presently being collected (shown in <u>Figure 21</u>)

- Interval Stats – four hours of information, presented as 16 15-minute intervals (shown in <u>Figure 22</u>)

- Current 24-hour Stats – total counts for a 24-hour period, up through the most recently completed 15-minute interval (shown in <u>Figure 23</u>)

Each display presents information concerning occurrences on the loop of four conditions:

- Errored Seconds - A one second interval containing one or more errors.

- Severely Error Seconds - A one second interval where the Bit Error Ratio (BER) exceeds 10^{-3}

- Unavailable Seconds - A 10 second period where the BER is worse than 10^{-3}

- Far End Block Errors - An indication returned to the transmitting unit that an error block has been detected at the receiving unit.

To access a Statistics display, type the selection number that corresponds to it and press Enter.

```
              UAS 7723 MR Current Statistics - Loop 1


 Errored Seconds                    :       40
 Severly Errored Seconds            :       30
 Unavailable Seconds                :       200
 Far End Block Errors               :       100




 [0] Return to Main Menu         [CR] Return to previous Menu


 Select: [ ]
```

Figure 21   UAS 7723 MR Current Statistics Screen

```
                 UAS 7723 Interval Statistics - Loop 1

 Int        ES        SES        UAS        FEBES
 1          0          0          0          0
 2          0          0          0          0
 3          0          0          0          0
 4          0          0          0          0
 5          0          0          0          0
 6          0          0          0          0
 7          0          0          0          0
 8          0          0          0          0
 9          0          0          0          0
 10         0          0          0          0
 11         0          0          0          0
 12         0          0          0          0
 13         0          0          0          0
 14         0          0          0          0
 15         0          0          0          0
 16         0          0          0          0


  [0] Return to Main Menu        [CR] Return to previous Menu


  Select: [ ]
```

Figure 22   UAS 7723 MR Interval Statistics Screen

```
        UAS 7723 MR Current 24 Hour Statistics - Loop 1


Errored Seconds            :        0
Severely Error Seconds  :        0
Unavailable Seconds       :        0
Far End Block Errors      :        0














 [0] Return to Main Menu        [CR] Return to previous Menu


 Select: [ ]
```

Figure 23   UAS 7723 MR Current 24 Hour Statistics Screen

Maintenance

The terminal interface Maintenance screen displays information about the unit and provides specialized control functions: Soft Reset, Reset to Factory Defaults, Reset Statistics, and individual BER alarm resets for each loop. Figure 24 illustrates the Maintenance screen.

```
                    UAS 7723 MR Maintenance

 Firmware Revision:         0122
 Serial Number:            0089090708980001

 Reset Options:
 [1] Soft Reset
 [2] Reset to Factory Defaults
 [3] Reset Statistics
 [4] Reset BER Alarms
 [5] Firmware Download




 [0] Return to Main Menu

 Select: [  ]
```

Figure 24   Maintenance Screen

The information display identifies the serial number and firmware revision level of the unit.

The Maintenance screen includes five command selections:

[1] Soft Reset – causes the UAS 7723 MR DIU to perform a reset and resume operation using its current configuration. All accumulated statistics begin new counts.

[2] Reset to Factory Defaults – causes all options in the UAS 7723 MR DIU to return to their factory default settings.

[3] Reset Statistics – causes the UAS 7723 MR DIU to zero out its accumulated statistics on selected loops and begin new counts

[4] Reset BER Alarms – causes the UAS 7723 MR DIU to clear BER threshold alarms on selected loops. Also a clears trap start BER from the beginning.

[5] Firmware Download – provides access to the Firmware Download Screen, which is described below under its own heading.

To Reset Statistics, just type 3 and press Enter. The message "Resetting Statistics" appears briefly at the bottom of the screen.

To Reset BER alarms, just type 4 and press Enter. This brings you to a sub screen that allows you to reset BER on Loop 1 or Loop 2. The message **"Resetting Ber Alarms on this loop"** appears briefly at the bottom of the screen.

When you are done with the Maintenance screen after resetting statistics, resetting BER alarms or simply viewing the screen, type 0 and press the Enter key to return to the Main Menu.

To perform a Soft Reset or a Reset to Factory Defaults:

1. Type the selection number of the reset you need to perform, 1 for Soft Reset or 2 for Reset to Factory Defaults, and press Enter.

    In response, the screen prompts for confirmation (in the actual displayed message, xxx is the name of the requested reset):

    *WARNING - xxx DISRUPTS COMMUNICATIONS `Continue? [ ] Y(es), N(o)`

2. To continue the reset process, type Y and press Enter.

    In response, the Maintenance screen is replaced by the following message (with the LIU slot number):

    Error: Slot x is not responding. `(Press Enter)`

3. press Enter.

    In response the screen displays the Shelf Inventory. For a Soft Reset the procedure is complete at this point, and the unit resumes operation with its existing configuration.

    The configuration that results from a Reset to Factory Defaults does not enable the unit to pass data. You must access the Unit Configuration and Current Service State screens to set up an operating configuration.

Firmware Download

The terminal interface Firmware Download function enables you to load new operating firmware into the DIU. Loading new firmware is typically required when GDC makes changes to improve performance or to include new features.

The UAS 7723 MR DIU can store two versions of operating firmware, designated as the Active Revision and the Standby Revision. You can have newly downloaded firmware immediately serve as the Active Revision, or you can store it as the Standby Revision. You can switch between Active and Standby Revisions as needed. See Figure 25.

```
                    UAS7723 MR Firmware Download

 Download Status:

 Active Firmware Revision   : 02.00.00
 Standby Firmware Revision  : 01.00.00
 Standby Firmware Status    : VALID - OK
 Download Mode              : DISABLE ALL DOWNLOADS



 Select Download Options:

 [1] Switch to Standby Firmware
 [2] Disable All Downloads
 [3] Enable Downloads and Store ZIP
 [4] Enable Downloads, UNZIP and Execute




 [0] Return to Main Menu       [CR] Return to previous Menu

 Select: [ ]
```

Figure 25   Firmware Download Screen

The Firmware Download screen contains four lines of read-only information display, and four command selections. The following information is displayed:

   Active Firmware Revision – displays the version and revision number of firmware that is currently operating in the DIU

   Standby Firmware Revision – displays the version and revision number of inactive firmware that the DIU has stored in zipped (compressed) format

   Standby Firmware Status – displays one of seven status indications:

      Invalid- Blank – new DIU with no standby firmware loaded

      Valid- OK – standby firmware loaded and ready for use

Invalid- Checksum Failed – standby firmware corrupted during download

Invalid- Download Aborted – download aborted in progress by SCM

Invalid- Unzip Failed – problem occurred during unzip of standby firmware

Downloading – transfer currently taking place

Calculating Checksum – approximately 40 seconds following completion of transfer

Download Mode – displays the DIU's selected response to a download of new firmware; see the command selections below for the potential modes

The four command selections are

[1] Switch to Standby Firmware – commands the DIU to unzip (decompress) the stored, inactive firmware and place it into service as the current operating firmware; at the same time the DIU zips and stores the firmware that it had been operating with

[2] Disable All Downloads – commands the DIU not to accept download of firmware; displayed as Download Mode when selected

[3] Enable Downloads and Store ZIP – commands the DIU to accept download of firmware, storing the newly downloaded code as the zipped and inactive Standby Firmware until it is placed into service by the Switch to Standby Firmware Now command; displayed as Download Mode when selected

[4] Enable Downloads, UNZIP and Execute – commands the DIU to accept download of firmware, immediately unzipping the newly downloaded code and placing it into operation, while storing the former operating code as zipped and inactive Standby Firmware; displayed as Download Mode when selected

The command selections establish the DIU's response to the downloading of firmware. Trivial File Transfer Protocol (TFTP) is used to perform the actual firmware download, using the following procedure: (This procedure is from a Unix workstation but the TFTP agent you prefer may be used).

1. Select a download mode on the unit. Either [3] or [4].

2. Open a TFTP (IP or hostname of SCM). session. If desired, open download screen on display in order to monitor the Download Status.

3. Initiate a TFTP session to the SCM.

4. At the TFTP prompt type

    bin

and press the Enter key so that the transfer takes place in binary mode.
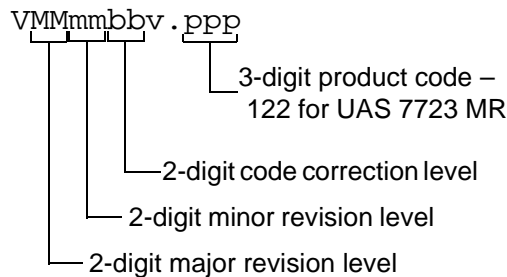
5. Type

    trace

and press the Enter key so that activity is displayed during the transfer.

6. Type

    ```
    put "firmware filename" "address & product code"
    ```
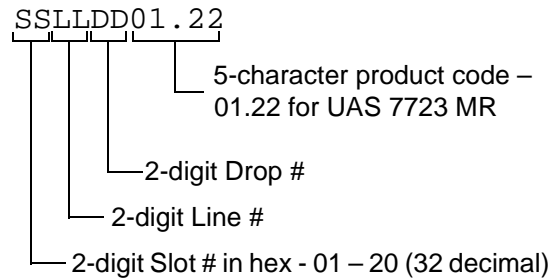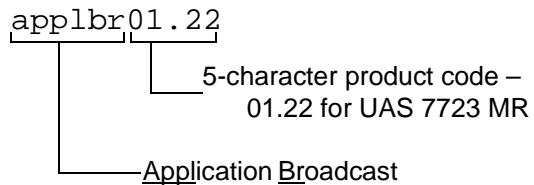
    and press the Enter key to initiate the actual transfer. The firmware filename is provided with the firmware that is to be downloaded. The address portion of the address & product code is the slot/line/drop address when you are downloading to a single unit. There is also a broadcast code that enables you to send new firmware to all the UAS 7723 MR DIUs in a shelf (or pair of shelves) at once. The figure on the following page provides further definitions of the filename and address formats.

Firmware Filename Format:

VMMmmbbv.ppp

    3-digit product code –
       122 for UAS 7723 MR

    2-digit code correction level

    2-digit minor revision level

    2-digit major revision level

Address and Product Code
Format, Single Unit:

SSLLDD01.22

    5-character product code –
       01.22 for UAS 7723 MR

    2-digit Drop #

    2-digit Line #

    2-digit Slot # in hex - 01 – 20 (32 decimal)

Address and Product Code Format,
All UAS 7723 MR Units in Shelf:

applbr01.22

    5-character product code –
       01.22 for UAS 7723 MR

    Application Broadcast

Note   *The Application Broadcast download can only be performed on master units, which occupy the same shelf as the SCM.*

7. While the download is taking place the Standby Firmware Status line displays Downloading. That is followed by a period of approximately 40 seconds while it displays Calculating Checksum.

Tests

The DIU 7723 MR supports the following loopbacks. All loopbacks are network managed. Each channel of each loop is capable of the loops as shown in Figure 26.
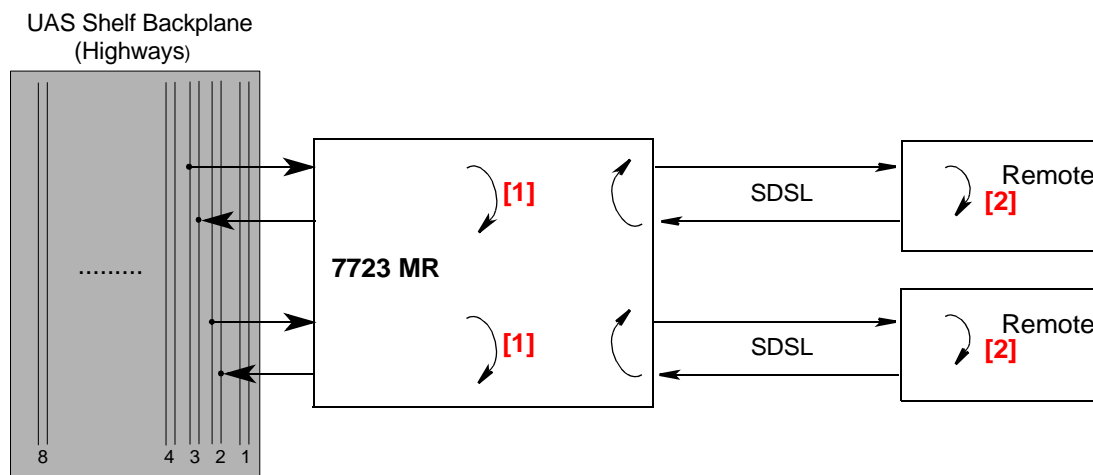
Loops

Digital Loopback **[1]**   The UAS 7723 MR loops data received from the SpectraComm/UAS backplane (highway) back to the backplane, as close to the SDSL line as practical.

Remote Loopback **[2]**   You may imitate a remote loopback where the remote unit is placed into the loopback condition. The loopback command to the remote unit is accomplished via the EOC channel.

Self Tests

Test Pattern Generator and Checker (BERT)   The UAS 7723 MR can insert a PRBS test pattern and checker into the data path. The generator inserts the test pattern into the transmit path toward the SDSL line and then checks for a pattern in the receive path from the SDSL line. You may use this test in conjunction with the Remote Loopback test to test the integrity of the SDSL line.

Power On Self Test   The UAS 7723 MR performs a card self-test upon power-up. This test performs a LED test and a RAM check.

Figure 26   DIU 7723 MR Loopbacks

System and Loop Diagnostics

The DIU 7723 MR performs the diagnostic loopbacks illustrated in *Figure 27* through *Figure 32*.

UAS 7723 MR Local Management (Telnet) may initiate, Digital Loopback, Self Test, and Remote Digital Loopback. TEAM 7700 for UNIX Manager can control all tests.

Self Test

Self Test transmits a 2^{15}-1 bit pattern and tests the receiver for bit errors.
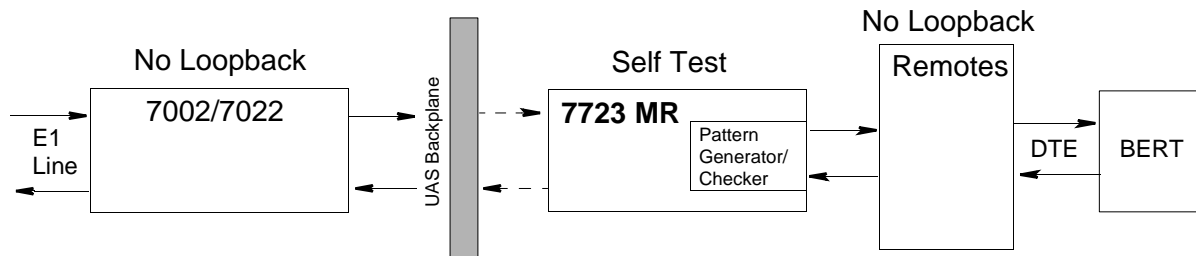
Figure 27   Self Test

Digital Loopback

Digital Loopback loops the payload data received path to transmits path back towards the system highway.
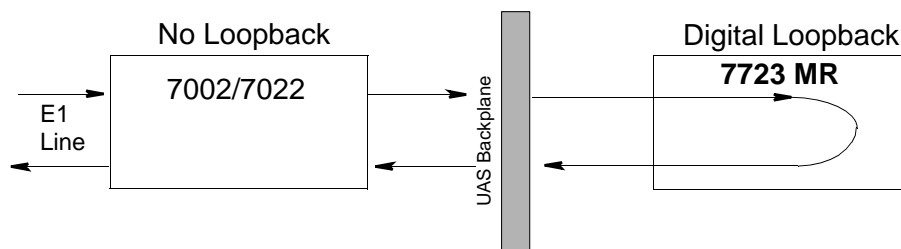
Figure 28   Digital Loopback

Remote Digital Loopback

Remote Digital Loopback commands a remote unit to go into loopback. (Telnet or Network Managed).
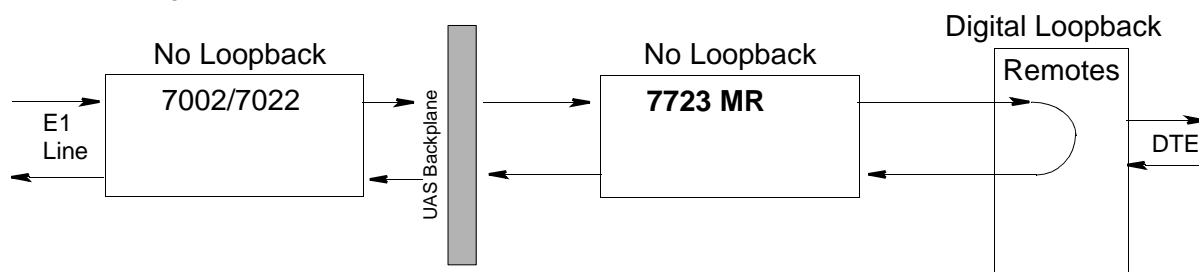
Figure 29   Remote Digital Loopback

Remote Digital Loopback with Self Test

Remote Digital Loopback with Self Test commands a remote device to go into loopback, and the 7723 MR transmits a 2^{15}-1 bit pattern and tests the receiver for bit errors.
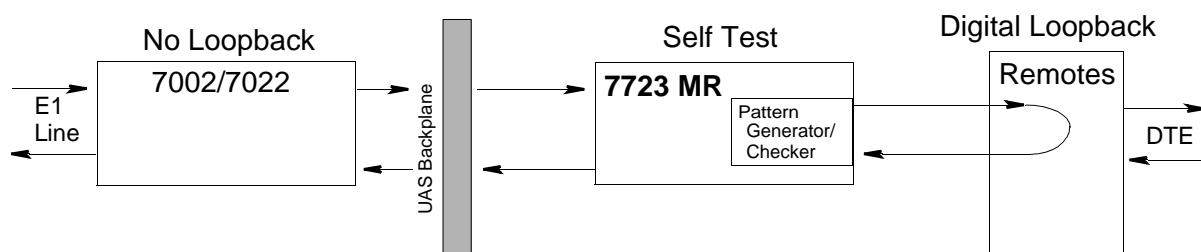
Figure 30   Remote Digital Loopback with Self Test

Master to Remote Self Test

Master to Remote Self Test puts the 7723 MR and the remote into a self-test (2^{15}-1 test pattern only).(Network managed or user initiates self test on Remote unit).
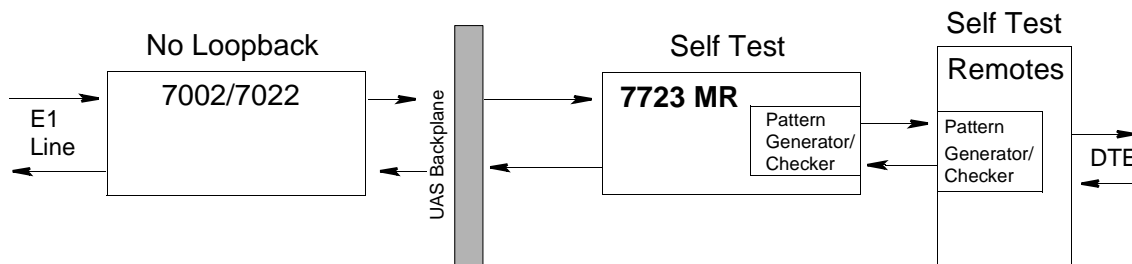
Figure 31   Master to Remote Self Test

Remote to Remote Self Test

Remote to Remote Self Test puts the remote unit into self-test (master is transparent). (2^{15}-1 test pattern). (Network managed or user initiates self test on Remote unit).
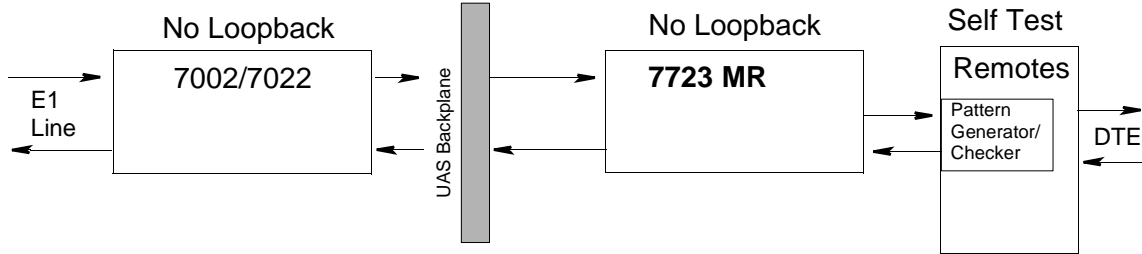
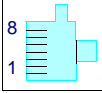**Figure 32**   Remote to Remote Self Test

Universal Backplane 50-Pin Mapping

Table 7 describes the mapping of the 50-pin Universal Backplane connector and Table 8 describes the 8-pin modular (bottom row) connector backplane mapping.

Table 7   Universal Backplane 50-Pin Mapping

Rear Panel 50-Pin "J" Nos.	Slot No.	7723 MR	
		Loop 2	Loop 1
J20	1	1, 26	3, 28
	2	5, 30	7, 32
	3	9, 34	11, 36
	4	13, 38	15, 40
	5	17, 42	19, 44
	6	21, 46	23, 48
J21	7	1, 26	3, 28
	8	5, 30	7, 32
	9	9, 34	11, 36
	10	13, 38	15, 40
	11	17, 42	19, 44
	12	21, 46	23, 48
J22	13	1, 26	3, 28
	14	5, 30	7, 32
	15	9, 34	11, 36
	16	13, 38	15, 40

Table 8   8-Pin Modular Connector (Bottom Row) Backplane Mapping

Pin	Function
1 Ring	Loop 2
2 Tip	Loop 2
3	
4 Ring	Loop 1
5 Tip	Loop 1
6	
7	
8	

8-Pin Modular Jack

Index