TABLE OF CONTENTS

OPERATIONS MANUAL

UNIVERSAL DATA CONVERTER

Modem Eliminator

UDC-ME

11 January 2011

FOR TECHNICAL SUPPORT CALL:

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SAFETY WARNING

Always observe standard safety precautions during installation, operation and maintenance of this product. ***To avoid the possibility of electrical shock, be sure to disconnect the power cord from the power source before servicing the device***. Line voltages are present within the device when the power cord is attached to the device.

DO NOT *attempt to repair this device. Only qualified service personel can service this device.*
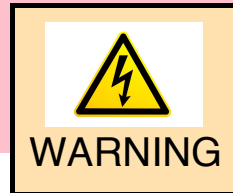
For AC powered devices which have 3 conductor power plugs (L1, L2 &GND or Hot, Neutral & Safety/Protective Ground), the wall outlet (or socket) must have an earth ground.

PROPRIETARY NOTICE

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WARRANTY NOTICE

WARRANTIES: East Coast Datacom, Inc.(hereafter referred to as E.C.D.) warrants that its equipment is free from any defects in materials and workmanship. The warranty period shall be three (3) years from the date of shipment. E.C.D.'s sole obligation under its warranty is limited to the repair or replacement of defective equipment, provided it is returned to E.C.D., transportation prepaid, within a reasonable period. This warranty will not extend to equipment subjected to; lightning strikes, electrical surges, water damage, misuse, alterations, mishandling (dropped and damaged) or repair not made by E.C.D. or authorized by E.C.D. in writing.

PUBLICATION NOTICE

This manual has been compiled and checked for accuracy. The information in this manual does not constitute a warranty of performance. E.C.D. reserves the right to revise this publication and make changes from time to time in the content thereof. E.C.D. assumes no liability for losses incurred as a result of out-of-date or incorrect information contained in this manual.

CHAPTER 1 - INTRODUCTION

1.1   FUNCTIONAL DESCRIPTION

The UDC-ME allows two DTE devices (such as routers) to communicate within proximity of each other. The UDC-ME transmits data bi-directionally at clock rates of 1.2k up to 3.072Mbps between DTE devices. All clocking and signal crossover are provided within the UDC-ME. The unit is equipped with two interface slots that allow a host of serial interface cards to be utilized. The serial interface cards available are RS-232, RS-422/449, RS-530, X.21, V.35 and HSSI. The Serial Interface cards are interchangeable and may be mixed such as RS-232 to V.35 thus eliminating the need for an interface converter or changing expensive serial cards on a DTE device such as a router.

The UDC-ME is also an excellent choice for testing router-to-router connections via the serial ports. The unit is an ideal choice for interconnecting your LAN or legacy mainframe equipment.

Installation is fast and simple by setting the internal switches for Clocking, Carrier Operation and RTS to CTS delay. The UDC-ME has status LED's for each attached DTE device which allows the user to visually confirm the presence of clock and control signals. Also included are options for data or clock inversion.

The UDC-ME utilizes state of the art digital CMOS technology to provide a feature filled product at a very affordable price. Our Field Programmable Gate Array (FPGA) design has allowed us to offer this product with a wide selection of clock rates. This design approach has also reduced the amount of clock jitter for high speed transmissions.

The UDC-ME is housed in a sturdy metal enclosure and operates on 110/220VAC or optional -48V DC power. Typical MTBF figures are in excess of 150,000 hours of operation.

The UDC-ME has a three year warranty and a 24 hour turnaround on warranty repairs.
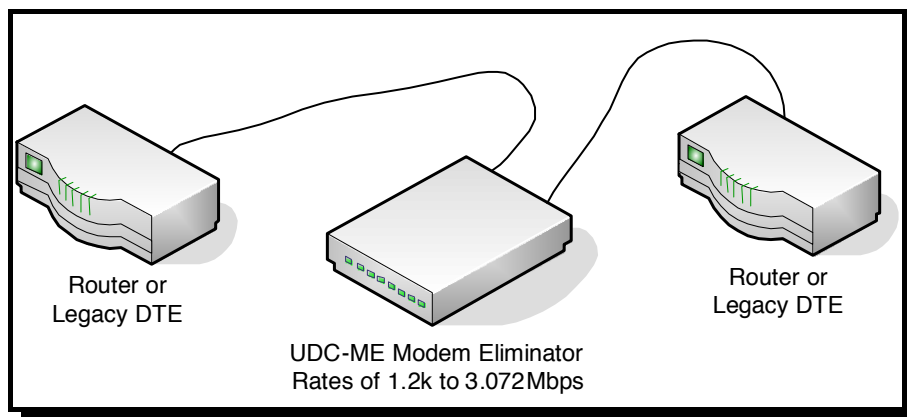
TYPICAL APPLICATION

Figure 1.1

CHAPTER 2 - PRODUCT OVERVIEW

2.1   FRONT PANEL INDICATORS

A *Green* LED marked **PWR** illuminates when AC Power has been applied. Two adjacent sets of *Green* LEDs, one for **PORT A** and another for **PORT B**, illuminate in union with individual port control signal activity. Both **Port A** and **Port B** indicators flash in union with **Port A** and **Port B** data interfaces(see section 2.4 Data Interfaces).

2.2   INTERNAL SWITCHES

The UDC-ME has three(3) dip switches. The switches are marked **SW1,** *SW2* **and** *SW5*. Switch **SW1** allows the user to set the Clock Rate(s). Switches **SW2** and **SW5** allow the user to Invert the Clock and force control Signals.

2.3   REAR PANEL POWER CONNECTOR

Located on the back or rear of the product you will find an **IEC POWER RECEPTACLE**. The supplied power cord plugs into this receptacle. This receptacle also contains a fuse drawer. Two (2) fuses are located in this compartment. For 110 VAC +/- 10% operation the unit is equipped with slow blow 160ma Fuses. For 220 VAC +/- 10% operation the unit is equipped with slow blow 80ma Fuses.

2.4   REAR PANEL DATA INTERFACE PORTS

Located adjacent to the IEC Power receptacle are the **DATA INTERFACE PORTS**. The ports are metal stamped **PORT A** and **PORT B**. The data interface modules plug into the UDC-ME main printed circuit board through these openings. The top two screws on the interface module hold the card into place. The front panel Port A and Port B indicators flash in union with Port A and Port B data interfaces.

2.5   CLOCKING

The UDC-ME allows clock rates from 1.2k to 3.072Mbps. The unit has 32 selectable clock rates.

2.6   DATA INTERFACES

The UDC-ME has a host of available **DATA INTERFACES** comprised of RS-232, V.35, RS-422/449, RS-530, X.21 and TTL. Each interface module is available in a DCE configuration, the true EIA or ITU recommended connector and female gender is provided. The V.35 interface modules are MR-34 male, with factory optional DB-25 female. *This option can reduce cabling costs.*

2.7   EXTERNAL CLOCK REFERENCE
The UDC-ME allows external timing(if applicable) for applications requiring such via **SW2** for either **Port A** or **Port B**.

2.8   CONTROL SIGNAL FORCING

DO NOT USE THE 3-PIN STRAPS ON THE INTERFACE CARDS TO FORCE CONTROL SIGNALS

The UDC-ME **Control Signals** are forced on the main printed circuit card located at switch position **SW5**. *ONLY* use the Dip Switch to force control signals.
When forcing control signals via **SW5**, you should see the control signal LED light illiminate on **Channel A** or **Channel B**.
While each Data Interface Module has straps(3 pin header) that force select control signals, those straps are for other East Coast Datacom products. It will not harm the unit, but utilizing them can give **false LED lights or operation**.

2.9   DATA INTERFACE REMOVAL

Disconnect the AC power source from the UDC-ME and disconnect the users data cables from the Data Interface Module(DIM). Located on back panel of the UDC-ME are PORT A and PORT B. Each DIM is plugged into and out of these ports through mating connectors. Remove the top cover using a phillips screwdriver, then remove the top two screws of the DIM. Gently pull the module from the UDC-ME housing. It may be easier to hold the edges of the DIM and rock the DIM back and forth as you pull the DIM out of the socket.
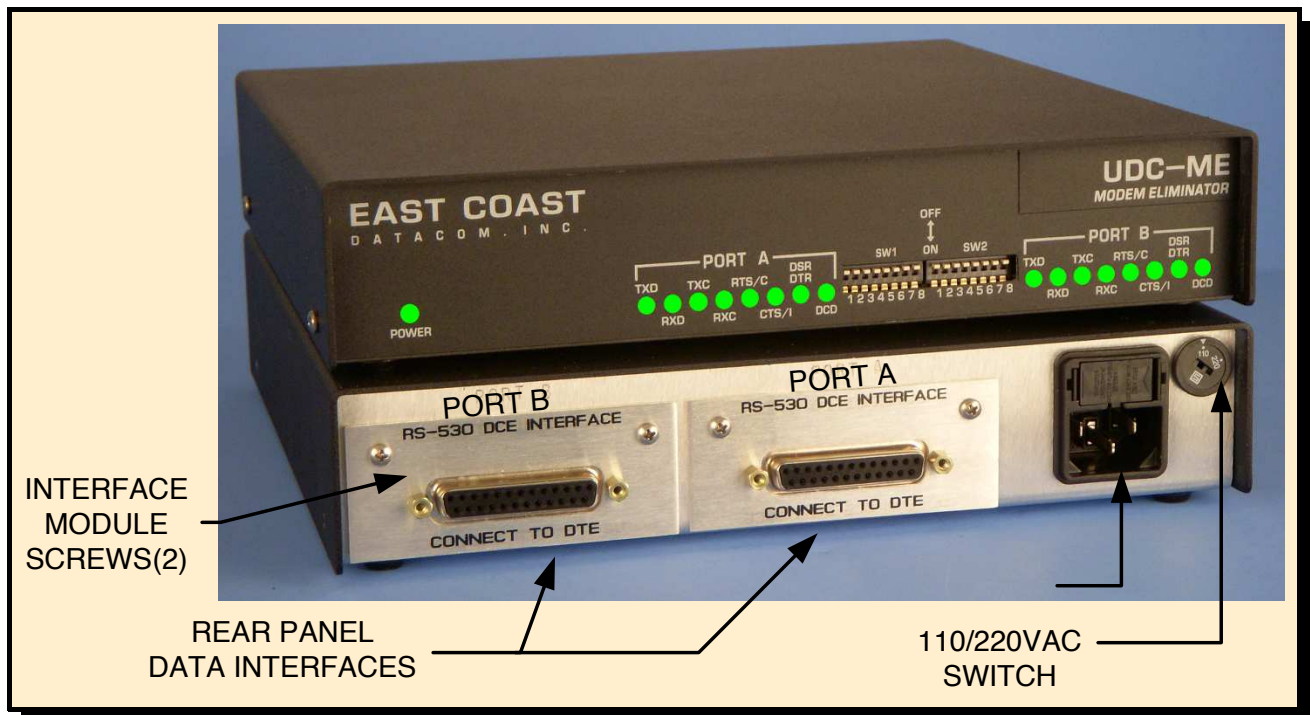
CHAPTER 3 - INSTALLATION

CAUTION: Disconnect Power Before Servicing
ATTENTION: Couper Le Courant Avant l' Entretien
VORSICHT: Befor Deckung Abnehmen Mach Strom Zu

3.1   VOLTAGE SELECTION

It is *very* important to check that the unit is set to the correct voltage setting for your application before applying AC power. Located on the rear of the unit you will find a rotary 110/220 VAC switch. Using a coin or small screwdriver, *gently* turn the switch to the appropriate power position as required for your installation (110 or 220 VAC).

3.2   VOLTAGE SELECTION FUSES

Located on the back or rear of the product you will find an IEC Power receptacle. This receptacle contains a fuse drawer. Two (2) fuses are located in this compartment. For 110 VAC +/- 10% operation the unit is equipped with slow blow 5 x 20mm 160ma Fuses, E.C.D. Part # 714000. For 220 VAC +/- 10% operation the unit is equipped with slow blow 5 x 20mm 80ma Fuses, E.C.D. Part # 714001. Spare fuses may be purchased by calling East Coast Datacom or by contacting the fuse manufacturer: Little Fuse www.littlefuse.com or Shurter, Inc. at www.schurter.com
Little Fuse Part #'s are: 160ma = 218.160 and 80ma = 218.080
Schurter, Inc. Part #'s are: 160ma = 034.3109 and 80ma = 034.3106

3.3   POWER CONNECTION

Before connecting the UDC-ME to an AC power source the top cover should be installed with the supplied #4-40 screws. AC power is supplied to the unit through a 2.3m (6.6 ft) cord terminated by a grounded 3-prong plug. Select an appropriate location accessible to and within four to five feet of an AC outlet. The AC Power source **MUST** be grounded or the units warranty will be void.

FUSE DRAWER

110 / 220 VAC SWITCH

IEC POWER CONNECTOR

Power Connection
Figure 3-1
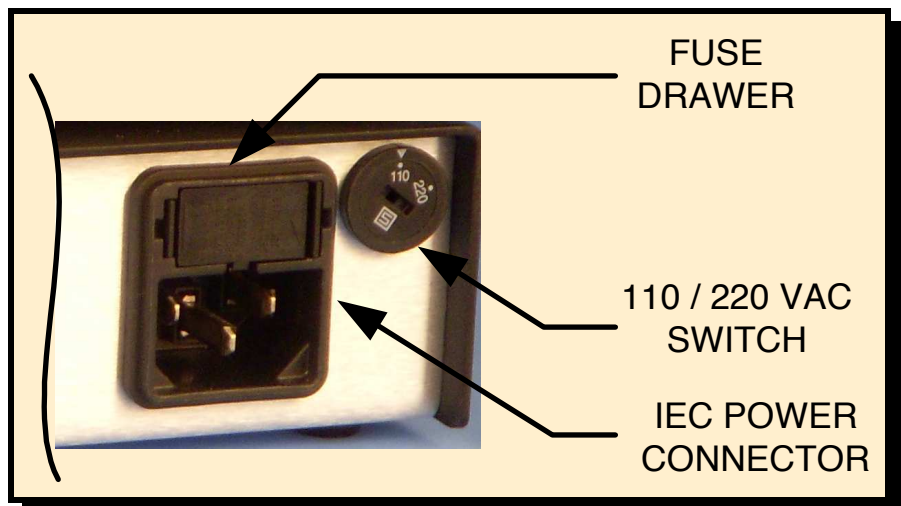
3.4   DEFAULT CONFIGURATION SWITCH SETTINGS

The UDC-ME is factory configured as follows:

1) Clock Source - **Internal**
2) Control Signals - ***All Signals Passed if present***
3) Sync Clock Rate - **1.2k**
4) Chassis to Signal GND - ***Not Connected***

If your system application requires one or more of the default settings to be changed, this is accomplished by removing the top cover to change Dip Switches ***SW2-SW5*** or to connect chassis to signal ground.

3.5   DATA PORT CONNECTIONS

Before applying AC Power to the unit, the users cabling to the UDC-ME Data Interfaces should be connected. Straight through shielded cables should be used. **PORT A** must *always* have a DCE interface module plugged into the port and connect to a DTE device. **PORT B** must *always* have a DTE interface module plugged into the port and connected to a DCE device.

3.6   SWITCH SETTINGS

3.6.1   DIP SWITCHES

The UDC-ME has three(3) dip switches. The switches are marked ***SW1, SW2* and *SW5***. Switch **SW1** allows the user to set the Clock Rate(s). Switches **SW2** and **SW5** allow the user to Invert the Clock and force control Signals.

3.7   EXTERNAL CLOCK OPTION

The UDC-ME allows external timing(if applicable) for applications requiring such via **SW2** for either **Port A** or **Port B**.
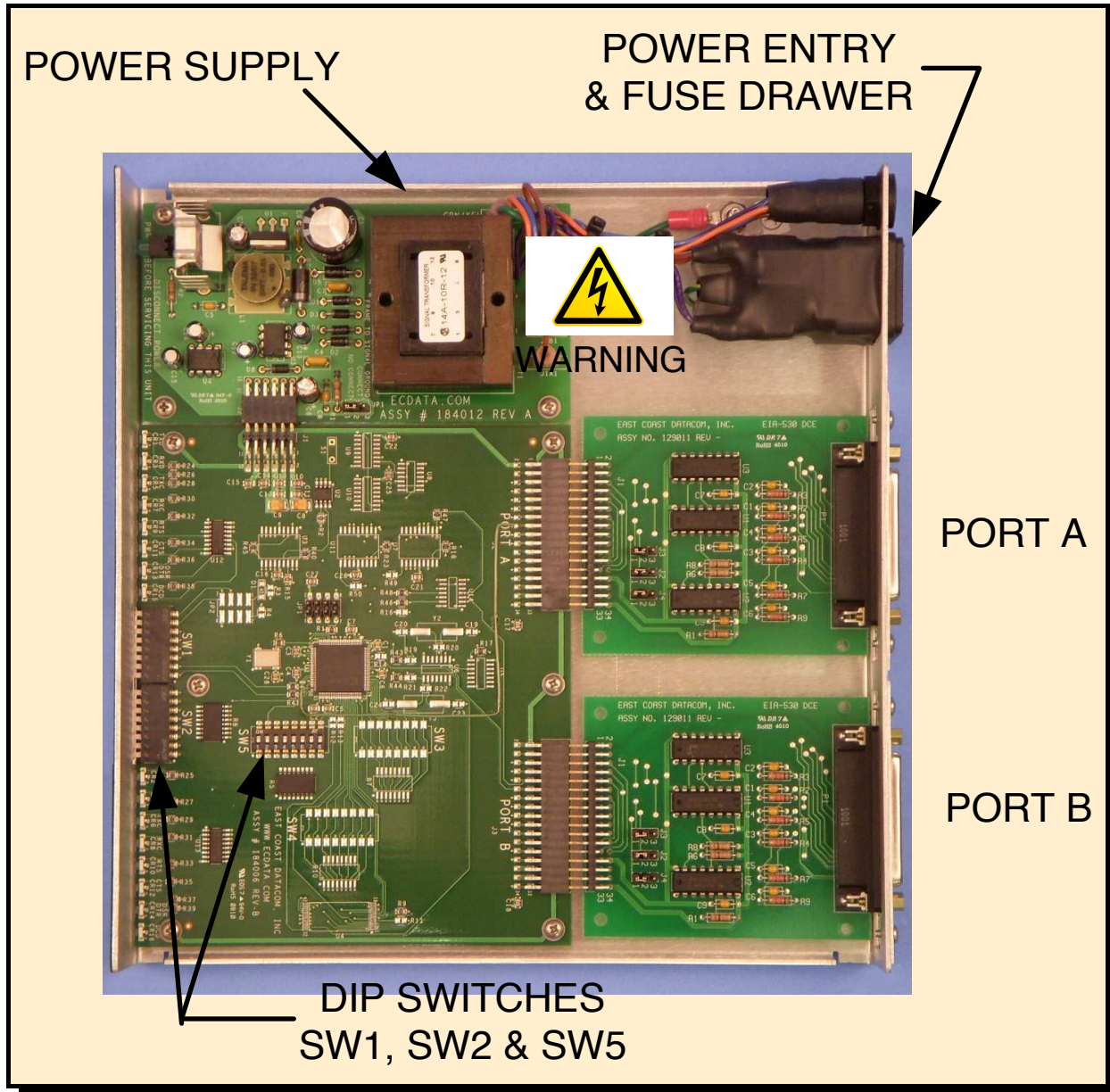
4.0 - APPENDIX

4.1   STRAP CHART

SME-ME BAUD RATE SETTING CHART

	Switch settings SW1							
	1	2	3	4	5	6	7	8
1,200	Unused	Unused	Unused	OFF	OFF	OFF	OFF	OFF
2,400	"	"	"	OFF	OFF	OFF	OFF	ON
4,800	"	"	"	OFF	OFF	OFF	ON	OFF
7,200	"	"	"	OFF	OFF	OFF	ON	ON
9,600	"	"	"	OFF	OFF	ON	OFF	OFF
14,400	"	"	"	OFF	OFF	ON	OFF	ON
16,000	"	"	"	OFF	OFF	ON	ON	OFF
19,200	"	"	"	OFF	OFF	ON	ON	ON
28,800	"	"	"	OFF	ON	OFF	OFF	OFF
32,000	"	"	"	OFF	ON	OFF	OFF	ON
38,400	"	"	"	OFF	ON	OFF	ON	OFF
48,000	"	"	"	OFF	ON	OFF	ON	ON
56,000	"	"	"	OFF	ON	ON	OFF	OFF
57,600	"	"	"	OFF	ON	ON	OFF	ON
64,000	"	"	"	OFF	ON	ON	ON	OFF
72,000	"	"	"	OFF	ON	ON	ON	ON
96,000	"	"	"	ON	OFF	OFF	OFF	OFF
128,000	"	"	"	ON	OFF	OFF	OFF	ON
192,000	"	"	"	ON	OFF	OFF	ON	OFF
256,000	"	"	"	ON	OFF	OFF	ON	ON
384,000	"	"	"	ON	OFF	ON	OFF	OFF
512,000	"	"	"	ON	OFF	ON	OFF	ON
768,000	"	"	"	ON	OFF	ON	ON	OFF
1,024,000	"	"	"	ON	OFF	ON	ON	ON
1,280,000	"	"	"	ON	ON	OFF	OFF	OFF
1,472,000	"	"	"	ON	ON	OFF	OFF	ON
1,536,000	"	"	"	ON	ON	OFF	ON	OFF
1,544,000	"	"	"	ON	ON	OFF	ON	ON
1,920,000	"	"	"	ON	ON	ON	OFF	OFF
1,984,000	"	"	"	ON	ON	ON	OFF	ON
2,048,000	"	"	"	ON	ON	ON	ON	OFF
3,072,000	"	"	"	ON	ON	ON	ON	ON

	SW2:	1	2	3	4	5	6	7	8
Internal Clock Generator									**OFF**
External Clock f/Port A									ON
CTS Port A follows RTS								**OFF**	
Force CTS Port A ON								ON	
CTS Port A Delay = 0 mS						**OFF**	**OFF**		
CTS Port A Delay = 6 mS						OFF	ON		
CTS Port A Delay = 12 mS						ON	OFF		
CTS Port A Delay = 24 mS						ON	ON		
Internal Clock Generator					**OFF**				
External Clock f/Port B					ON				
CTS Port B follows RTS				**OFF**					
Force CTS Port B ON				ON					
CTS Port B Delay = 0 mS		**OFF**	**OFF**						
CTS Port B Delay = 6 mS		OFF	ON						
CTS Port B Delay = 12 mS		ON	OFF						
CTS Port B Delay = 24 mS		ON	ON						
	SW5:	1	2	3	4	5	6	7	8
Port A TXC Normal		**OFF**							
Port A TXC Inverted		ON							
Port A RXC Normal			**OFF**						
Port A RXC Inverted			ON						
Port B TXC Normal				**OFF**					
Port B TXC Inverted				ON					
Port B RXC Normal					**OFF**				
Port B RXC Inverted					ON				
Port A DCD Follows Port B CTS						**OFF**			
Port A DCD Always ON						ON			
Port A DSR Follows Port B DTR							**OFF**		
Port A DSR Always ON							ON		
Port B DCD Follows Port B CTS								**OFF**	
Port B DCD Always ON								ON	
Port B DSR Follows Port B DTR									**OFF**
Port B DSR Always ON									ON

***

Bold denotes factory default settings ***

4.2 UNIT OVERVIEW

POWER SUPPLY

POWER ENTRY
& FUSE DRAWER

WARNING

PORT A

PORT B

DIP SWITCHES
SW1, SW2 & SW5

Application
Interconnection of two DTE (Terminal) devices located within proximity of each other

Capacity
Two (2) DTE's

Serial Data Interface
RS-232, RS-422/449, RS-530, X.21, V.35 and HSSI

Data Format
Data Transparent at all Data Rates

Inversion Option
Data Inversion or Clock Inversion

Data Rates
1.2k, 2.4k, 4.8k, 7.2k, 9.6k, 14.4k, 16k, 19.2k, 28.8k, 32k, 38.4k, 48k, 56k, 57.6k, 64k, 72k, 96k, 128k, 192k, 256k, 384k, 512k, 768k, 1.024M, 1.280M, 1.472M, 1.536M, 1.544M, 1.920M, 1.984M, 2.048M, 3.072M

Indicators
Power, TXD, RXD, TXC, RXC, RTS, CTS, DTR, DCD

Surge Protection
Main power supply

Power Source
AC Mains: 100-120 to 200-220VAC @10%, 50/60Hz, 0.16/0.08A, external 110/220 volt select switch, IEC Power Inlet, (2) 5mm Fuses
DC Mains: DC Voltage, Input Range of -36 to -72vdc Current Draw at 48vdc: 75ma @ 3.6watts

Environmental
Operating Temperature....32º to 122º F (0º to 50º C)
Relative Humidity.............5 to 95% Non-Condensing
Altitude...........................0 to 10,000 feet

Dimensions
Height .... 1.75 inches (4.44 cm)
Width .... 9.00 inches (20.86 cm)
Length .... 9.00 inches (22.86 cm)

Weight
2 pounds (0.914Kg)

Warranty
Three Years, Return To Factory

ORDERING INFORMATION
Main Unit Part Number: 189000
Model: UDC-ME
Description: UDC Modem Eliminator, rates of 1.2k to 3.072M

Serial Interface Cards, Two Cards Required Per UDC-ME, may be the same card twice or any combination.

PART NUMBER	SERIAL CARD
129014	RS-232 DCE I/M,
129010	V.35 DCE I/M,
129011	RS-530 DCE I/M,
129012	RS-422/449 DCE
129013	X.21 DCE I/M,
151028	HSSI DCE I/M, 50

INCLUDED WITH EACH UNIT:
1) Operations Manual
2) U.S.A. Grounded Power Cord, Part # 713015
3) Optional Power Cords
   A) United Kingdom, Part # 713016
   B) Continental Europe, Part # 713017
   C) Other: Specify Country on Purchase Order

OPTIONAL ACCESSORIES
1) Spare Data Center Fuses
   A) 160ma Fuse, Qty (2) Part # 714000
   B) 80ma Fuse, Qty (2) Part # 714001

For further detailed technical information on this product, contact East Coast Datacom Technical Assistance toll free at (800) 240-7948

OTHER EAST COAST DATACOM PRODUCTS

MODEM AND PORT SHARING DEVICES
INTERFACE CONVERTERS
SIGNAL REGENERATORS
LINE DRIVERS