



RFL Electronics Inc.

T R A I N I N G O U T L I N E

RFL IMUX 2000E OUTLINE

1.0 INTRODUCTION

1.1 Course Overview

2.0 GENERAL E1 CARRIER THEORY

2.1 E-1 Basics

2.2 How E1 Works

2.3 E1 Compared to T1 Networks

2.4 THE DS-1 Signal Format

2.5 HDB3/CRC4 & CAS

3.0 MAIN RFL E1 MULTIPLEXER FEATURES

3.1 Synchronous Data

3.2 Asynchronous Data

3.3 Control Signal

3.4 Network Timing

3.5 Drop and Insert

3.6 Fallback Timing

3.7 Electrical 75/120 ohm or Fiber Optic E-1 Carrier System

3.8 Automatic Fiber Optic Gain Control

3.9 32 Channel Capacity

3.10 Modular Construction

3.11 Substation Hardened (SWC/Fast Transient/EMI)

3.12 Network Capability

3.13 Universal Time Slots

3.14 Remote Monitoring

3.15 S/W and DIP Switch Programmable

3.16 Upward compatible to SDH

3.17 Self Testing Diagnostics

3.18 Redundant Power Supplies



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4.0 MULTIPLEXER RELIABILITY

- 4.1 Average Reframe Time
- 4.2 Robustness
- 4.3 Through Channel Delay
- 4.4 Fallback Timing

5.0 MULTIPLEXER DIAGNOSTICS

- 5.1 Status Monitoring
- 5.2 Test Jacks
- 5.3 Loopbacks

6.0 MULTIPLEXER ALARMS

- 6.1 Major Alarm Condition
- 6.2 Minor Alert Conditions

7.0 IMUX 2000 MULTIPLEXER

- 7.1 IMUX System Specification
- 7.2 Main Mux Shelf
- 7.3 Repeater/Expansion Self
- 7.4 T-1 Common Module (**CM-6B**)
- 7.5 Common Module Interface Adapters (**MA216, MA211, OIAEs**)
- 7.6 Power Supply Modules (**24Vdc, 48Vdc-125Vdc, 250Vdc, 120Vac**)
- 7.7 Power Supply Alarm I/O Modules (**DC Input, AC Input, DC/AC Input**)
- 7.8 Channel Modules & Modules Adapters Customer's Cards only Selected: (**VF-5AE, VF6I, VF8A, VF15C, VF16E, VF25E, DS562I, DA191A, DA91I, DA121I, Status, DS64NC, MTS**) New: **SAG, MA427-LAN, Video Module**
- 7.9 Multiplexer Application
- 7.10 Troubleshooting E1



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8.0 NETWORK MANAGEMENT SOFTWARE (NMS)

- 8.1 General Information
- 8.2 System Requirements
- 8.3 Software Installation
- 8.4 Connecting PC To The Network
- 8.5 Getting Started
- 8.6 Using NMS Icons
- 8.7 Card Supported by NMS
- 8.8 Troubleshooting

9.0 HANDS ON

- 9.1 Set-Up and Configuration of IMUX2000 Multiplexer
- 9.2 System Performance Test
- 9.3 Troubleshooting

10.0 HANDS ON (Optional)

- 10.1 Set-Up and Configuration of IMUX2000 Multiplexer With DACS
- 10.2 System Performance Test
- 10.3 Troubleshooting

11.0 IMUX 2000E MINI-DIGITAL CROSS-CONNECT SYSTEM (MINI-DACS) (Optional)

- 11.1 Functional Description of the MINI-DACS
- 11.2 MINI-DACS System Specification
- 11.3 MINI-DACS Chassis
- 11.4 MINI-DACS Processor Module
- 11.5 MINI-DACS Module
- 11.6 Modules Adapters (**MA211A,MA221, MA226, MA231, OIAE**)
- 11.7 MINI-DACS Settings (Software) Switching/Delays/Service
- 11.8 MINI-DACS Settings (Hardware) 75/120 ohm impedance
- 11.9 MINI-DACS Mapping & Routing
- 11.10 Power Supply Modules (**24Vac,48Vdc-125Vdc, 250Vdc, 120Vac**)



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- 11.11 Power Supply Alarm I/O Modules (**DC Input, AC Input, DC/AC Input**)
- 11.12 MINI-DACS Application Grooming vs Switching

12.0 HANDS ON

- 12.1 Set-Up and Configuration of IMUX2000 Multiplexer With MINI-DACS
- 12.2 System Performance Test
- 12.3 Troubleshooting

13.0 IMUX 2000 CUSTOMER EQUIPMENT

- 13.1 Customer Block Diagram
- 13.2 Set-Up and Configuration of IMUX2000 Multiplexer
- 13.3 Payload layout
- 13.4 Set-up and Configuration of IMUX2000 MINI-DACS
- 13.5 System Performance Test
- 13.6 Troubleshooting
- 13.7 Maintenance
- 13.8 Question and Answer

14.0 OVERVIEW OF IMUX2000E MANUAL

15.0 GENERAL QUESTION AND ANSWER

- 15.1 Multiplexer
- 15.2 MINI-DACS
- 15.3 NMS
- 15.4 Application