

FIBER OPTIC DS-2 EXTENSION (FOX-2) UNIT  
GENERAL DESCRIPTION

1. GENERAL

- 1.01 This section is a cover sheet for the Telco Systems Fiber Optics Corporation Fiber Optic DS-2 Extension (FOX-2) Unit General Description. This section is reproduced with permission of Telco Systems Fiber Optics Corporation and is the equivalent of Telco practice 829-100-001, Issue 2.
- 1.02 Whenever this section is reissued the reason(s) for reissue will be listed in this paragraph.
- 1.03 This section describes the basic functions and features of the Fiber Optic DS-2 Extension (FOX-2) Unit.
- 1.04 If corrections are required in the attached document, use Form-3973 as described in Section 000-010-015.
- 1.05 If equipment design and/or manufacturing problems should occur, refer to Section SW 010-522-906 for procedures on filing an Engineering complaint.

2. ORDERING PROCEDURE

- 2.01 For information concerning equipment and parts availability contact Telco Systems, Order Administration Department, in Norwood, Massachusetts, at:
- 1-800-44-SALES  
1-617-551-0300
- 2.02 To order additional copies of this practice, use TELC 365-407-845SW as the section number.

3. REPAIR/RETURN

- 3.01 For defective modules and assemblies contact the Repair and Return Department at the following number:

8:00 a.m. - 5:00 p.m. (617) 551-0300 - Ext. 2778

Attachment: Telco Systems Fiber Optics Corporation  
Fiber Optic DS-2 Extension (FOX-2) Unit  
General Description

PROPRIETARY

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		SECTION VII MAINTENANCE details all procedures required for unit-level maintenance, including: fault isolation, card and module replacement, and the procedures necessary for the return and repair of equipment.
1. SCOPE		
A. General		
1.01 This section describes the basic functions and features of the Fiber Optic DS-2 Extension (FOX-2). Figure 1 shows the FOX-2 unit with its cover closed.		SECTION VIII DRAWINGS provided all drawings, schematics, and assembly prints needed to aid maintenance people in unusual situations.
1.02 This section was reissued to add new information.		
B. Manual Organization		2. GENERAL
1.03 This manual contains the following sections:		A. Safety Precautions
SECTION I GENERAL DESCRIPTION provides an overview of FOX-2 operation with emphasis on features and functions incorporated into equipment design.		2.01 As with any product, care must be exercised when working near the 117 Vac office power or the low voltage outputs of the Power Supply card. Verify that the equipment bay is properly grounded to the third wire of the ac power cord, and that all power interconnections are correctly insulated. The FOX-2 is fused at the 117 Vac input receptacle on the backplane.
SECTION II THEORY OF OPERATION presents a detailed discussion of equipment subsystems and circuit card operation to block diagram level.		



Figure 1. FOX-2 with Cover On

2.02 The cards and modules of the FOX-2 are designed to be removed and inserted without defusing the power source.

Warning: To prevent possible equipment damage from electrical arcing at the end of the power line, never disconnect 117 Vac power at the connector panel receptacle, always disconnect the ac cord at the office ac power outlet.

2.03 Circuit cards can be damaged by electrical static discharge. Before touching the circuit cards, use an approved anti-static wrist strap connected to an electrical ground.

2.04 Circuit cards left on equipment table tops etc. can be damaged by static electricity or accidental contact with power sources. Loose boards should be kept inside static protective bags (PKG033-1), until it is time to install them.

## B. References

2.05 Since the FOX-2 may interface to an 828 or 828A Multiplexer, these manuals may also be of value.

Below is a list of equipment manuals that may be useful in installing and maintaining the FOX-2 system.

828M Multiplexer 828M-03-A

828F Multiplexer 828F-03-A

828A Multiplexer 828A-01-A

## 3. PRODUCT OVERVIEW

### A. Unit Description

3.01 The FOX-2 is an optical DS-2 (6.312 Mb/s) unit available as a

wall-mounted cabinet with door locks to prevent unauthorized entry. The FOX-2 accepts up to 4 DS-1 signals or 2 DS-1C signals and generates a DS-2 optical output. The backplane is accessible through a side panel that is not locked. The high-speed optical interface is the LTU (Light Terminating Unit). The FOX-2 must be equipped with a main LTU, while the standby LTU (for protection of optical DS-2) is optional. The low-speed interface is either a T1 or T1C interface card. These modules have protection multiplexing circuitry built onto one circuit card.

3.02 The FOX-2 unit requires various circuit cards. The minimum configuration is:

- 1 Power Supply module
- 1 Control MPU
- 1 Main LTU
- 1 T1 or T1C low speed interface

Optional card:

- 1 Standby LTU

### B. System Description

3.03 The FOX-2 has several different system configuration options. For a point-to-point DS-2 system, a FOX-2 unit can be installed at each site with either protected or unprotected LTUs. LTUs can also be installed in the low-speed section of any 828 or 828A multiplexer and then extended to a FOX-2 unit at another site. Again protection of the DS-2 signal is optional (See the 828 and 828A manuals for further information). The FOX-2 is microprocessor controlled through the control MPU. This monitors performance and controls alarm indications when appropriate. It also initiates switching to a standby channel, if a unit is so equipped.

3.04 The FOX-2 accepts low speed inputs to the T1 or T1C interface cards through a 15 pin connector on the backplane. The low speed card converts the signal to bipolar and multiplexes 4 T1s (or 2 T1Cs) to a DS-2 signal. The LTU then provides the timing clock and converts the signal to an optical DS-2. The transmitter portion of the LTU modulates the output of an LED.

3.05 The receive section of the LTU uses a pin diode to accept the 3B6B encoded signal and then converts it back to an electrical DS-2. The low speed interface will demultiplex the DS-2 signal and output DS-1 or DS-1C signals.

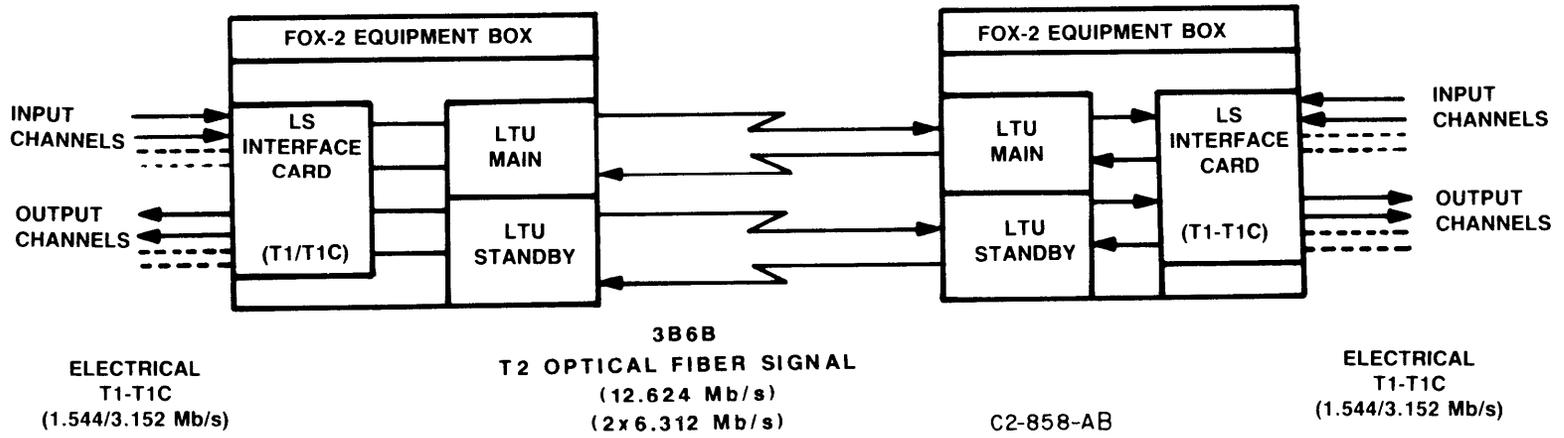
#### C. System Applications

3.06 Figure 2 shows a FOX-2 to FOX-2 configuration. This provides a point-to-point optical DS-2 system which delivers up to 4 T1 signals to a customer site.

3.07 Figure 3 depicts the extension of a FOX-2 from an 828 multiplexer product. Up to 6 protected FOX-2 units can be extended from an 828.

3.08 The installation of LTUs in an 828M or 828F requires the multiplexer to be equipped with power supply PSX006-2 and MPU CCA002G20. Any 828A or 828AF power supply will accommodate the addition of LTUs and MPU CCA137G20 is required.

Figure 2. FOX-2 to FOX-2 Fiber Optic System



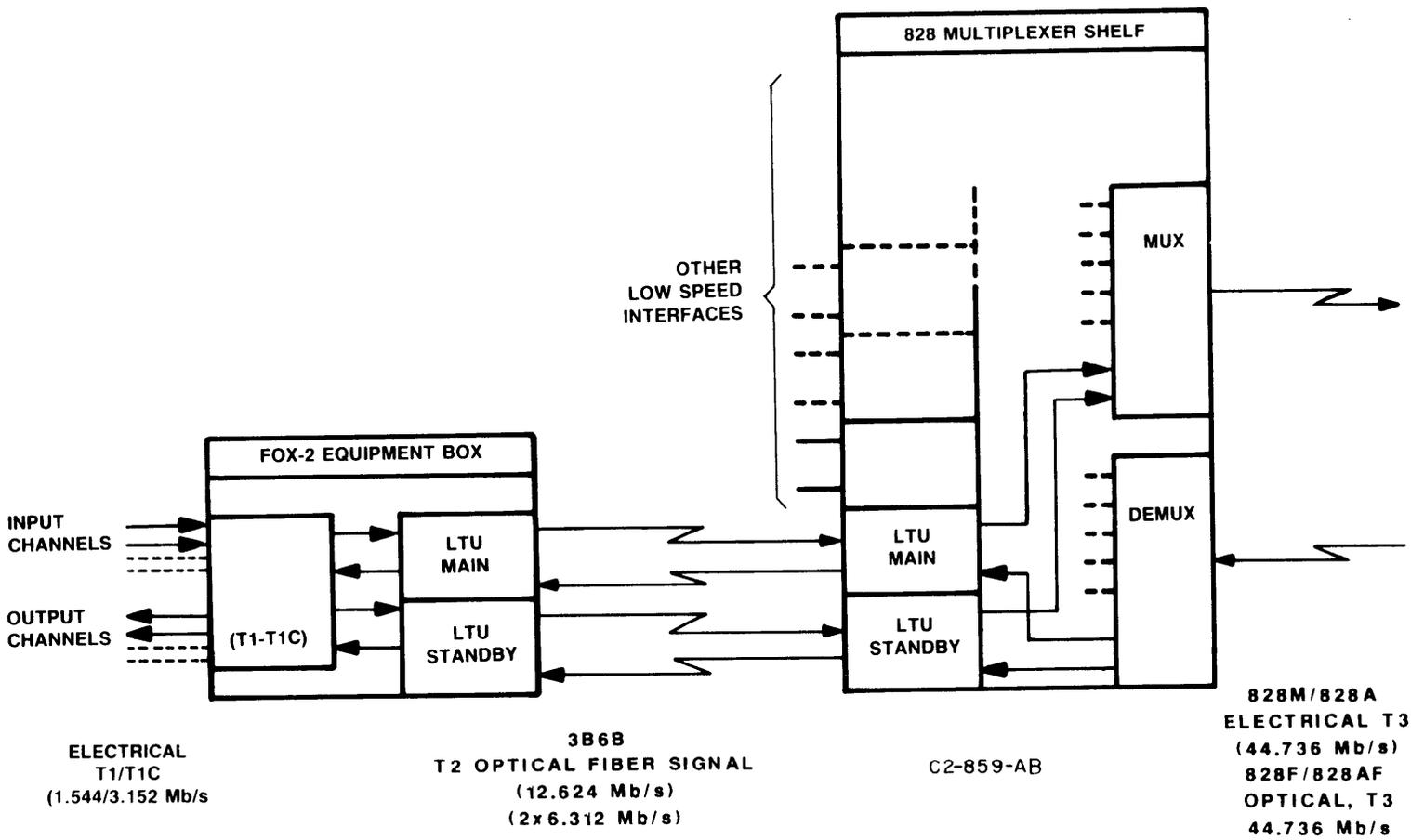


Figure 3. FOX-2 to 828 Multiplexer Fiber Optic System