

FOX-2R DS-2 FIBER OPTIC EXTENSION UNIT
SPECIFICATIONS

1. GENERAL

- 1.01 This section is a cover sheet for the Telco Systems Fiber Optics Corporation FOX-2R DS-2 Fiber Optic Extension Unit Specifications. This section is reproduced with permission of Telco Systems Fiber Optics Corporation and is the equivalent of Telco practice 831-100-004, Issue 1.
- 1.02 Whenever this section is reissued the reason(s) for reissue will be listed in this paragraph.
- 1.03 This section contains the mechanical, electrical, physical, and environmental unit-level specifications for the FOX-2R DS-2 Fiber Optic Extension.
- 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 365-407-860SW 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

PROPRIETARY

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Attachment: Telco Systems Fiber Optics Corporation
FOX-2R DS-2 Fiber Optic Extension Unit
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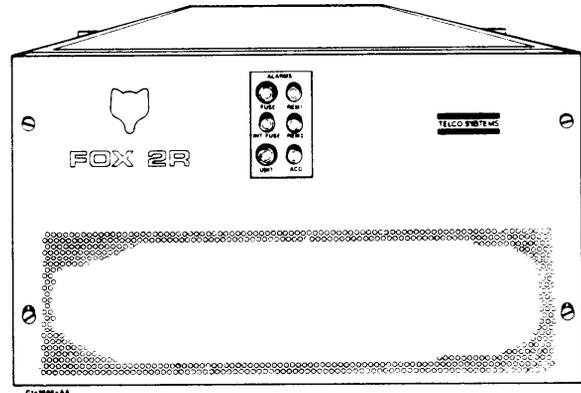


Figure 4-1. FOX-2R Unit.

1. SCOPE

1.01 This section contains the mechanical, electrical, physical, and environmental unit-level specifications for the FOX-2R DS-2 Fiber Optic Extension Unit.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

2. EQUIPMENT DESCRIPTION

2.01 The FOX-2R (See Figure 4-1) is a dual 1:1 protected DS-2 fiber optic extension unit. Each unit within the FOX-2R is capable of multiplexing up to four T1 (1.544 Mb/s) or two T1C (3.152 Mb/s) channels into a single DS-2 (6.312 Mb/s) data channel for transmission as a 12.624 Mb/s 3B6B encoded single-mode optical data stream.

2.02 The unit is designed for standard 19-inch rack mounting and can be installed in central office, feeder hub, and customer premises locations. Typical system applications include the use of the FOX-2R as an end terminal, for a point-to-point DS-2 optical system, or as the remote site terminal of a DS-2 optical extension from an 828A or 828AF multiplexer.

3. TRANSMISSION SPECIFICATIONS

3.01 TABLE A contains the optical and electrical transmission specifications for the FOX-2R. Information derived from this section should be evaluated when determining system compatibility with other digital transmission equipment.

3.02 DS-1 and DS-1C low-speed interfaces to the FOX-2R are in compliance with the data transmission specifications listed in the following industry compatibility reference documentation:

Bellcore TA-TSY-000038 Issue 3

"Single-Mode InterOffice Digital Fiber Optic Systems."

3.03 The FOX-2R will meet all stated requirements for radiated electric field emission and susceptibility as specified in the following industry documentation:

Bell Systems NEBS TRP-EOP-000063

FCC Rules Part 15, Subpart J for Class A computing equipment

TABLE A. Transmission Specifications

SPECIFICATION	PARAMETERS
DS-1 INTERFACE Number of Lines: Line Rate: Line Code: Line Impedance: Pulse Amplitude: Jitter Generation: Cable: DS-1 Span: Connector Interface	Up to 8 for the FOX-2R. 1.544 Mb/s \pm 130 ppm Switch Selectable B8ZS or AMI (CCA161G2) (per channel) 100 ohms, nom. balanced 3.0V \pm 0.6V <0.3 UI rms ABAM or equivalent 655 ft. to DSX-1 cross-connect 15-pin D-sub connector
DS-1C INTERFACE Number of Lines: Line Rate: Line Code: Line Impedance: Pulse Amplitude: Cable: DS-1C Span: Connector Interface:	Up to 4 for the FOX-2R. 3.152 Mb/s \pm 30 ppm Half-width Bipolar (AMI) 100 ohms, nominal balanced 3.0V nominal ABAM or equivalent 655 ft. to DSX-1C cross-connect 15-pin D-sub connector
OPTICAL DS-2 INTERFACE Number of Lines: Line Rate: Line Code: Wavelength Spectral Width: Transmit Device: Receive Device: Transmitter Output: Receiver Sensitivity: Available Power: Recomm. Margin: Optical Connector:	2 fibers per LTU card (TX/RX) 12.624 Mb/s (2 x 6.312 Mb/s) \pm 33 ppm 3B6B (Vendor proprietary) 1250 nm to 1320 nm center frequency 80 nm line width LED with single-mode fiber PIN detector -32.0 dBm (worst case) -45.0 dBm @10 ⁻⁶ BER (worst case) System gain 11.0 dBm worst case minimum. Equipment operating margin is 6.0 dB for FC-type optical connector to account for time and temperature variations. FC-type optical connector (TX and RX)
ALARM INTERFACE Alarm Output: Alarm Interface:	NO/NC dry relay contacts Major I, Major II, Minor I, Minor II, Remote I, Remote II, Major Audible, Major Visual, Minor Audible, Minor Visual, Fuse, and ACO alarms and status information is available for interface to local alarm equipment at a single 37-pin D-type connector J6 on the FOX-2R Connector Panel.

4. ELECTRICAL/THERMAL SPECIFICATIONS

4.01 TABLE B contains the specifications for primary power input and related maximum worst-case heat

dissipation for the FOX-2R DS-2 Optical Extension Unit. These statistics should be considered in dc power plant loads or air conditioning facility engineering.

TABLE B. Electrical/Thermal Specifications

SPECIFICATION	PARAMETERS
PRIMARY POWER	-48 Vdc (-42 Vdc to -56 Vdc) 40 Watts (Dual 1:1 protected)
SECONDARY POWER	+15.0 Vdc +5.0 Vdc -5.2 Vdc
VOLTAGE RANGE	Unloaded voltage variations is ± 0.02 Vdc. Loaded voltage variation is $\pm 4\%$.
VOLTAGE ALARM THRESHOLD	Produced an out of voltage specification alarm for any secondary voltage that is between 5% and 10% over or under voltage.
THERMAL DISSIPATION	128 BTU/hr. (worst-case maximum) (Dual 1:1 protected FOX-2R with all accessories)

5. MECHANICAL SPECIFICATIONS

5.01 TABLE C contains FOX-2R mechanical and dimensional specifications. This information should be consulted to plan the orientation

and mounting of the FOX-2R in new or existing equipment racks in accordance with installation information contained in the Initial Installation Procedure (831-100-005).

TABLE C. Mechanical Specifications

SPECIFICATION	PARAMETERS
<p>CAGE DIMENSIONS</p> <p>Height:</p> <p>Width:</p> <p>Depth:</p> <p>MECHANICAL DESCRIPTION</p> <p>Rack Mounting:</p> <p>Case Construction:</p> <p>Cage Layout:</p> <p>Ground Connection:</p> <p>UNIT WEIGHT</p> <p>Maximum Weight:</p>	<p>10.4 inches (26.4 cm)</p> <p>19.0 inches (48.3 cm)</p> <p>12.0 inches (30.48 cm)</p> <p>The case is designed to be rack-mounted into a standard 19-inch equipment rack. Side mounting ear extensions are available for 23-inch rack mounting.</p> <p>The case is made from mild steel and aluminum, and is secured to the rack with 4 screws.</p> <p>The case has a single cover. With the cover removed, there is immediate access to the front Fuse and Alarm Panel. Behind this panel is the connector panel. Beneath the panel is the module placement area.</p> <p>The circuit card cage is one shelf and houses the various circuit modules.</p> <p>A ground connector is located at upper middle of the front of the cage, for grounded wrist strap connection.</p> <p>40 lbs (18.1 kg.) fully-loaded</p>

6. ENVIRONMENTAL SPECIFICATIONS

6.01 Environmental specifications for the FOX-2R are listed in TABLE D. Facilities planning should address the environmental requirements of the FOX-2R as outlined in this section.

6.02 The FOX-2R unit does not require any forced air cooling device with normal ambient convective cooling. Recommended bay configura-

tions for the unit are detailed in the Initial Installation section (831-100-005) of this manual.

6.03 The FOX-2R meets or exceeds the environmental requirements specified in the following industry compatibility reference publication:

Bell Systems Technical Reference

PUB TR-EOP-000063
Section 4.2.1 and 4.4.4

TABLE D. Environmental Specifications

SPECIFICATION		PARAMETERS
Temperature Range		+0°C to + 50°C (32°F to 122°F)
Relative Humidity		Up to 80% (non-condensing)
Altitude		Up to 10,000 ft. above sea level.
Electromagnetic Compatibility:		The Electromagnetic requirements of Bell TR EOP 000063 and FCC part 15, sub-part J, are met.
Frequency (MHz)	Measurement Distance	Field Strength (uV/meter)
30 - 88	30 meters	30
88 - 216	30 meters	50
216 - 1000	30 meters	70