## DIGITAL TRANSMISSION SYSTEM 828AF DIGITAL MULTIPLEXER SPECIFICATIONS

#### 1. GENERAL

2.1

- 1.01 This section is a cover sheet for the Telco Systems Fiber Optics Corporation Digital Transmission System 828AF Digital Multiplexer Specifications. This section is reproduced with permission of Telco Systems Fiber Optics Corporation and is the equivalent of Telco practice 830-102-004, Issue 2.
- 1.02 Whenever this section is reissued the reason(s) for reissue will be listed in this paragraph.
- 1.03 This section contains specifications for the 828AF Digital Multiplexer and the card and module specifications.
- 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 365-407-852SW as the section number.

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#### 3. REPAIR/RETURN

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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 Digital Transmission System 828AF Digital Multiplexer Specifications

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## TELCO SYSTEMS FIBER OPTICS CORPORATION Norwood, Massachusetts 02062

## DIGITAL TRANSMISSION SYSTEM 828AF DIGITAL MULTIPLEXER SPECIFICATIONS

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#### 1. SCOPE

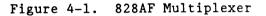
1.01 This section contains specifications for the 828AF Digital Multiplexer (see Figure 4-1), and the card and module specifications.

1.02 This section is reissued to update the specifications, and for general revisions.

- 2. MULTIPLEXER SPECIFICATIONS
- 2.01 TABLE A contains the 828AF specifications, including interface and power requirements, physical characteristics, and environmental operating conditions.
- 3. CARD AND MODULE SPECIFICATIONS

3.01 This subsection contains the specifications for the cards and modules of the 828AF Multiplexer. Included are specifications on the following:





- LS INTER T1 (T1 Low-Speed Interface) card (TABLE B)
- LS INTER TIC (TIC Low-Speed Interface) card (TABLE C)
- LS INTER T2 (MAIN and STBY Low-Speed Interface) card (TABLE D)
- HS COM (High-Speed Common) card (TABLE E)
- XCVR (Transceiver) card (TABLE F)
- Power Supply Module Input/Output Voltages (TABLE G)
- DS-2 Optical Interface, Single-Mode and Multimode LTU Cards, optional (TABLE H)
- Remote Alarm Card (RAC II), optional (TABLE I)

TABLE A.	828AF Digital	Multiplexer	System	Specifications
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<pre>1.544 Mb/s ± 130 ppm Half-width Bipolar (AMI)* 100 ohms, nominal balanced 3.0 V ± 0.6 V 0.3 time-slots rms ABAM or equivalent 655 feet to cross-connect facility</pre>
3.152 Mb/s <u>+</u> 30 ppm Half-width Bipolar, (AMI)* 100 ohms, nominal balanced 3.0 V nominal (zero-to-peak) ABAM or equivalent 655 feet to cross-connect facility
<pre>6.312 Mb/s ± 33 ppm B62S (Bipolar with 6-Zero substitution) 110 ohms, nominal balanced 4.2 V ± 10% ABAM or equivalent 1000 feet to DSX-2 cross-connect facility; line buildout networks supplied for shorter spans.</pre>
44.736 Mb/s <u>+</u> 20 ppm (optical) Randomized NRZ data 1280 nm

\* AMI (Alternate Mark Inversion)

TABLE A. 828AF Digital Multiplexer System Specifications (Cont.)

MULTIPLEXER MA				
	Capacity:	Up to 28 lines of 1.5	544 Mb/s data	
	exed Data Rate:	44.736 Mb/s ± 20 ppm		
	t Multiplex Timing:			
	pedance:	75 ohms, $\pm$ 5% unbalar	ncea	
Reframe	Time - Automatic:	T1C 17 ms T2 7 ms		
		T3 2 ms		
Onorati	ng Modo	IJ 2 ms Full Duplex		
	ng Mode: Interface:	ruii Dupiex		
	Rate:	44.736 Mb/s <u>+</u> 20 ppm	(optical)	
	Code:	Randomized NRZ data	(0,0000)	
PRIMARY POWER				
Voltage	:	-21 Vdc to -28 Vdc;	-42 Vdc to -56 Vdc	
Power Consumption:		40 Watts		
	- <u></u>			
PHYSICAL		6.0 inches		
Height: Width:		23.0 inches		
Depth:		11.5 inches		
Weight:		22.0 lb. (fully load	ed)	
_			,	
•	S-1C, DS-2			
Connectors:		Wire-wrap		
ENVIRONMENTAL	CONDITIONS (OPERAT)	ING)		
	Min. to Max.	Min. to Max.	<b>Relative</b> Humidity (30 <sup>0</sup> C	
Condition	Temperature (°F)		% Non-Condensing	
Operational:	+32 to +104	0 to +40	Up to 80%	
Short Term:	+32 to +122	0 to +50	Up to 90%	
			10 to 95%	

Note: Ambient temperature refers to conditions 5 feet above the bottom of, and 15 inches in front of the 828AF.

## TABLE B. LS INTER T1 Card Specifications

Line Rate:	1.544 Mb/s ± 130 ppm
Line Code:	Half-width bipolar (AMI)*
Impedance:	100 ohms nominal, balanced
Amplitude:	3.0 V ± 0.6 V
Cable Type:	ABAM or equivalent
Cable Span:	O to 655 feet to DSX-1 cross-connect facility

## TABLE D. LS INTER T2 Card Specifications

Line Rate:	6.312 Mb/s ± 33 ppm	
Line Code:	B6ZS (Bipolar with 6-Zero Substitution)	
Impedance:	110 ohms nominal, balanced	
Amplitude:	<u>+</u> 4.2 V <u>+</u> 10%	
Cable Type:	ABAM or equivalent	
Cable Span:	1000 feet to DSX-2 cross-connect facility with line buildouts for shorter cable spans	

## TABLE C. LS INTER TIC Card Specifications

Line Rate:	3.152 Mb/s <u>+</u> 30 ppm
Line Code:	Half-width bipolar (AMI)*
Impedance:	100 ohms nominal, balanced
Amplitude:	3.0 V nominal (zero-to- peak)
Cable Type:	ABAM or equivalent
Cable Span:	O to 655 feet to DSX-1C cross-connect facility

\* AMI (Alternate Mark Inversion)

TABLE E. HS COM Card Specifications

Line Rate:	44.736 Mb/s <u>+</u> 20 ppm
Line Code:	ECL (Emitter-Coupled Logic) level
Format:	Bell System DS-3 Mastergroup structure

TABLE	F. XCVR Card Specifications	TABLE
Output:	-9.0 dBm <u>+</u> 1.5 dB	Input Volt
Receiver* Sensitivity:	<u>&lt;</u> -37.0 dBm	Input Volt
Receive Saturation:	≥ -23.0 dBm	Output Vol (Full Load

\* This includes the loss at the XCVR card receive optical connector.

TABLE G. Power Supply Module Specifications

Input Voltages:	-42 to -56 Vdc (PSX016-1)
Input Voltages:	-21 to -28 Vdc (PSX016-2)
Output Voltages: (Full Load)	-5.6 Vdc ± 0.025 Vdc +5.4 Vdc ± 0.025 Vdc +15.3 Vdc ± 0.050 Vdc

TABLE H. DS-2 Optical Interface

#### Single Mode LTU Card Specifications

Number of lines: Line Rate: Line Code: Wavelength: Spectral Width: Transmit Device: Receiver Device: Transmitter Output: Receiver Sensitivity: Available Power: Required Margin:

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  $\geq$  -31.5 dBm -43 dBm at 10<sup>-9</sup> BER System Gain 11.5 dBm Equipment operating margin is 5.5 dB, includes time and temperature variations FC-type optical connector

2 fibers per LTU card (TX/RX)

# Optical Connector:

### Multimode LTU Card Specifications

Number of lines: Line Rate: Line Code: Wavelength: Spectral Width: Transmit Device: Receiver Device: Transmitter Output: Receiver Sensitivity: Available Power : Required 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 Not Available ELED with Multimode fiber PIN detector  $\geq$  -20.0 dBm -42.0 dBm at 10<sup>-9</sup> BER System Gain 22.0 dBm minimum Equipment operating margin is 6.0 dB, includes time and temperature variations FC-type optical connector Alarm Input Capacity:Eight Opto-Coupled Alarm PointsAlarm Active Range<br/>Lack of a Voltage Input:<br/>Input Voltage Sense:0 Vdc ± 500 mV<br/>5 to 53.75 VdcInput Impedance:2.7 kohms (Design per PUB 49001)Relay Contact Closure Outputs:EightRelay Contact Closure Rating:500 mAContact Closure Fusing:1 A

Table I. Remote Alarm Card (RAC II) Specifications

Note: Contact closures may be configured to be normal energized or de-energized.