AEROSPACE STANDARD

SAE AS4074/2

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Type F-2 Fiber Optic Media Interface Characteristics

1. SCOPE:

   This slash sheet specifies the operational parameters and characteristics of a particular implementation of the SAE Linear, Token Passing Bus (LTPB) Interface Unit.

   This slash sheet defines the following:

   a. The physical media interface: This slash sheet specifies the characteristics of the optical interface to the physical bus media.

   b. The minimum and maximum timing requirements for operation of this implementation of the LTPB.

   c. The data coding used to encode and decode the data for transmission.

   d. The default values to be loaded into the timers of the LTPB interface at power-up prior to intervention by the host processor.

2. REFERENCES:

   There are no referenced publications specified herein.

PREPARED UNDER THE JURISDICTION OF
SAE COMMITTEE AS-2, INTERCONNECT NETWORKS

TO PLACE A DOCUMENT ORDER: (724) 776-4970   FAX: (724) 776-0790   SAE WEB ADDRESS: http://www.sae.org

TYPE F-2 FIBER OPTIC MEDIA INTERFACE CHARACTERISTICS

Parameter	Description	Units	Requirement
COMMON CHARACTERISTICS			
-	Encoding Method and Symbol Set		Manchester II see Figure 1
R_d	Data Rate	Mbps	50 ± 0.01%
R_s	Signaling Rate	MBaud	100 ± 0.01%
T_o	Nominal Bit Time	ns	20
T_m	Minimum Duration Between Transitions	ns	10
T_{sr}	Maximum Station Response Time	ns	500
S_{itg}	System Minimum Intertransmission Gap	ns	280
W1	Optical Wavelength Lower	nm	800
W2	Optical Wavelength Upper	nm	880
BW	Spectral Bandwidth	nm	60
TPT	Token Passing Timer Initializ. Value	us	10.20
BAT	Bus Activity Timer Initializ. Value	us	15*(PSA+1)
RAT	Ring Admit. Timer Initializ. Value	ms	100
THT	Token Holding Timer Initializ. Value	us	50
TRT1	Token Rot. Timer 1 Initializ. Value	us	400
TRT2	Token Rot. Timer 2 Initializ. Value	us	300
TRT3	Token Rot. Timer 3 Initializ. Value	us	200
TRANSMITTER CHARACTERISTICS			
T_{po}	Transmitter Optical Power (Signal High)	dBm	-3.0 ± 1.5
T_{pr}	Transmitter Residual Power (Signal Low)	dBm	-16
T_{pl}	Transmitter Leakage Power (Tx Off)	dBm	-40
T_r	Transmitter Maximum Rise Time	ns	4
T_f	Transmitter Maximum Fall Time	ns	6
T_{pwd}	Transmitter Maximum Pulse Width Distortion	ns	2.4
T_{ous}	Transmitter Combined Over/Under-Shoot	%	5
T_{to}	Transmitter Nominal Bit Time	ns	20 ± 10%
T_{tm}	Transmitter Minimum Signaling Duration	ns	10 ± 5%
T_{ds}	Data Streaming Timer	ms	68 ± 1%
T_{sk}	Transmitter Redundant Media Skew Time	ns	150
P_t	Transmitter Preamble Length	Bit Times	16

TYPE F-2 FIBER OPTIC MEDIA INTERFACE CHARACTERISTICS (CONTINUED)

Parameter	Description	Units	Requirement
RECEIVER CHARACTERISTICS			
R_{po}	Receiver Maximum Optical Power Input	dBm	0
R_{or}	Receiver Operating Range	dB	21
R_{idr}	Receiver Intertransmission Dyn. Range	dB	15
R_{pm}	Receiver Minimum Optical Power Input	dBm	-32.5
R_{ous}	Receiver Combined Over/Under-Shoot	%	25
R_r	Receiver Maximum Rise Time	ns	5
R_f	Receiver Maximum Fall Time	ns	7
R_{pwd}	Receiver Maximum Pulse Width Distortion	ms	2.4
R_{ta}	Receiver Nominal Bit Time	ns	20 ± 10%
R_{tm}	Receiver Maximum Signaling Rate	ns	10 ± 10%
R_{ber}	Receiver Maximum Bit Error Rate	-	10exp[-10]
P_r	Receiver Minimum Valid Preamble Length	Bit Times	12
MEDIA CHARACTERISTICS			
D_{core}	Fiber Core Diameter	um	200
D_{clad}	Fiber Cladding Diameter	um	240
NA	Fiber Minimum Numerical Aperture	-	0.2
D_{cm}	Maximum Total Dispersion	ns	3
A_{min}	Minimum Optical Attenuation	dB	11.5
A_{max}	Maximum Optical Attenuation	dB	28.5