

Issued 1993-12
Reaffirmed 2001-10
Noncurrent 2004-10
Reaffirmed Noncurrent 2011-11
Superseding AS4074/3

Type E-1 Electrical Media Interface Characteristics

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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 electrical 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

SAE AS4074/3 Revision A

TYPE E-1 ELECTRICAL 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 ₀	Nominal Bit Time	ns	20
T _m	Minimum Duration Between Transitions	ns	10
T _{sr}	Maximum Station Response Time	ns	500
S _{int}	System Minimum Intertransmission Gap	ns	280
S _v	Surge Voltage Level	V	±1000
S _d	Surge Voltage Duration	ms	10
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 _{vo}	Transmitter Output Voltage Level (On)	V	±(7.5 ± 20%)
T _{vr}	Transmitter Peak Output Voltage Level (Off)	V	±0.05
T _r	Transmitter Maximum Rise Time	ns	4 ± 50%
T _f	Transmitter Maximum Fall Time	ns	4 ± 50%
T _{oss}	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 _{iz}	Transmitter Drive Impedance	Ohms	50 ± 20%
T _{ds}	Data Streaming Timer	ms	68 ± 1%
T _{sk}	Transmitter Redundant Media Skew Time	ns	150
P _t	Transmitter Preamble Length	Bit Times	4

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TYPE E-1 ELECTRICAL MEDIA INTERFACE CHARACTERISTICS (CONTINUED)

Parameter	Description	Units	Requirement
RECEIVER CHARACTERISTICS			
R_{vo}	Receiver Maximum Input Voltage	V	± 12
R_{vm}	Receiver Minimum Input Voltage	V	± 0.1
R_{idr}	Receiver Intertransmission Dyn. Range	dB	26
R_{ous}	Receiver Combined Over/Under-Shoot	%	10
R_r	Receiver Maximum Rise Time	ns	10
R_f	Receiver Maximum Fall Time	ns	10
R_{to}	Receiver Nominal Bit Time	ns	$20 \pm 10\%$
R_{tm}	Receiver Maximum Signaling Rate	ns	$10 \pm 10\%$
R_{iz}	Receiver Input Impedance	Ohms	$50 \pm 20\%$
R_{cmr}	Receiver Common Mode Rejection Ratio	-	0.5
R_{ber}	Receiver Maximum Bit Error Rate	-	$10\exp[-12]$
R_{nv}	Receiver Noise Voltage Input	mV	2.5
P_r	Receiver Minimum Valid Preamble Length	Bit Times	4
MEDIA CHARACTERISTICS			
A_r	Attenuation of Reflected Signals	dB	34
A_{min}	Minimum End-to-End Attenuation	dB	10
A_{max}	Maximum End-to-End Attenuation	dB	28
$W1$	Transmission Sys. Lower Bandpass Freq.	MHz	0.5
$W2$	Transmission Sys. Upper Bandpass Freq.	MHz	100
D_{gp}	Group Propagation Delay Difference	ns	1
D_j	Jitter	ns	1