INTERNATIONAL STANDARD

ISO 11519-3

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AMENDMENT 1
1995-04-01

Road vehicles — Low-speed serial data communication —

Part 3:
Vehicle area network (VAN)

AMENDMENT 1

Véhicules routiers — Communication en série de données à vitesse basse —

Partie 3: Réseau local de véhicule (VAN)

AMENDEMENT 1

Reference number
ISO 11519-3:1994/Amd.1:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Amendment 1 to International Standard ISO 11519-3:1994 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 11519 consists of the following parts, under the general title *Road vehicles — Low-speed serial data communication* :

— *Part 1: General and definitions*

— *Part 2: Low-speed controller area network (CAN)*

— *Part 3: Vehicle area network (VAN)*

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Road vehicles — Low-speed serial data communication —

Part 3:
Vehicle area network (VAN)

AMENDMENT 1

Page iv

Insert new page v and the following Introduction.

Introduction

Validation tests on vehicles have been conducted on the basis of ISO 11519-3:1994. The speed of data transmission has been increased up to 250 kTS/s with the same reliability providing that:

— Filter description and system characteristics are more precisely given, and

— parameter specifications of the transceiver are improved.

Amendment 1 to ISO 11519-3 details the necessary changes to the 1994 Standard.

Page 79

Add a new clause before clause 8, to read as follows.

7.6 Alternative up to 250 kTS/s

This clause describes the network interface up to 250 kTS/s.

The definition of TS (Time Slot) is according to clause 7.2.3 Bit encoding of ISO 11519-3 (VAN).

250 kTS/s is corresponding to 125 kbit/s in Manchester coding and 200 kbit/s in Enhanced Manchester coding.

7.6.1 System description

7.6.1.1 Functional block diagram

This block diagram is given in figure 52.

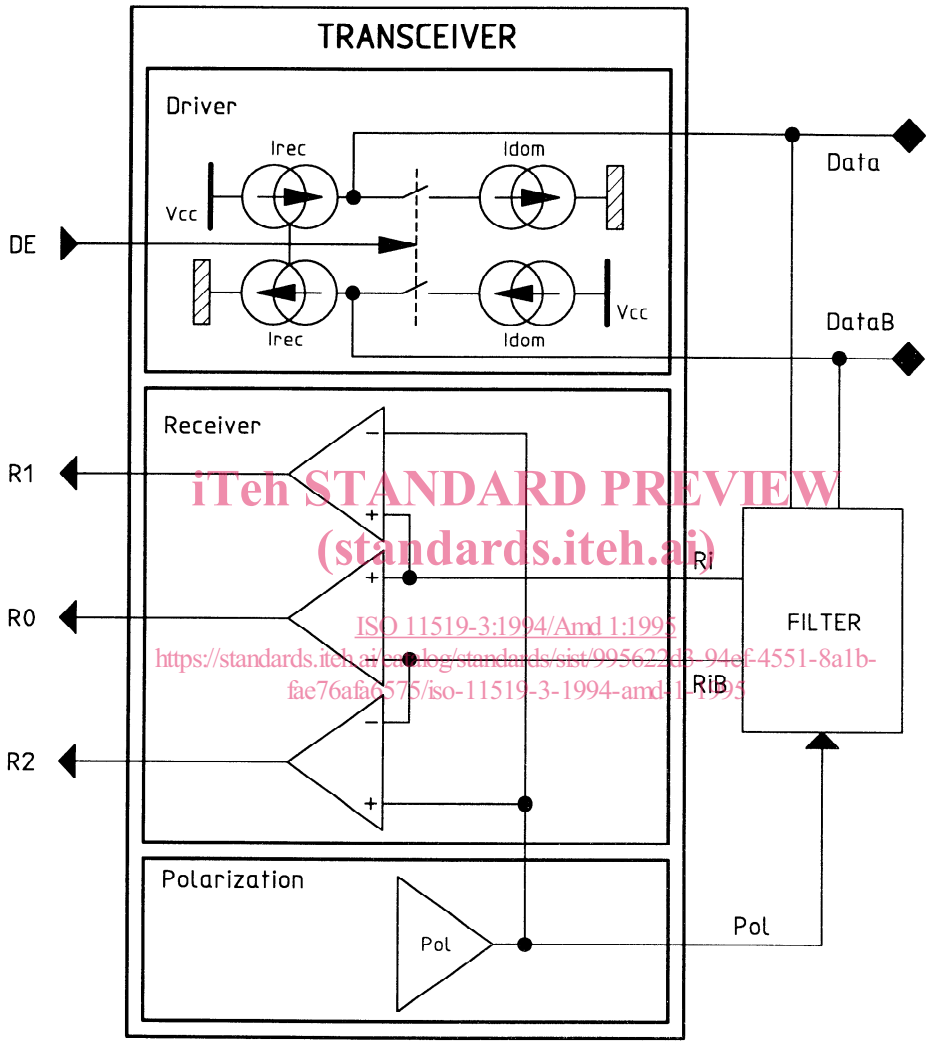
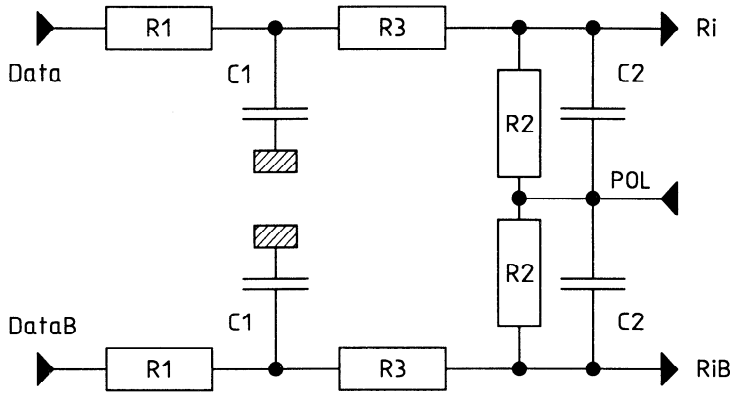


Figure 52 — 250 kTS/s VAN bus interface

7.6.1.2 Filter section

The diagram is given in figure 53, together with the parameters.



Parameter	Recommended value	Tolerance	Comments
C1	100 pF	± 10 %	⩾ 50 V
C2	120 pF		⩾ 25 V
R1	100 Ω		1/4 W continuous
R2	1800 Ω	± 2 %	1/16 W continuous, 0,3 W during 400 ms
R3	2700 Ω		1/4 W continuous 1,25 W during 400 ms

Figure 53 — 250 kTS/s filter

7.6.1.3 Cable characteristics

Parameter	Test condition and description	Value			
		min.	typical	max.	Unit
Cg-data	Overall capacitance between ground and Data	0		200	pF/module
Cg-dataB	Overall capacitance between ground and DataB	0		200	pF/module
Cdata-dataB	Overall capacitance between Data and DataB	0		100	pF/module
Coverall	= Cg-data + CgdataB + 2 CgData-DataB; by node connected and 2,0 V offset ground in nominal mode or 0,7 V offset in degraded mode.	0		200	pF/module
Lcable	Overall cable length	0		20	m
RISOLg-data	Overall resistor isolation between ground and data	50			kΩ
RISOLg-dataB	Overall resistor isolation between Data and DataB	50			kΩ
RISOLdata-dataB	Overall resistor insulation between Data and DataB	20			kΩ
RCOND	Overall serial resistor of Data or DataB between nodes	0		4	Ω

7.6.1.4 System characteristics

7.6.1.4.1 Number of nodes connected to the network

Parameter	Test condition and description	Value			
		min.	typical	max.	Unit
Mnode	Number of nodes connected to network	2		12	node

7.6.1.4.2 Timing characteristics

In accordance to VAN protocol at 250 kTS/s, with Enhanced Manchester coding.

Parameter	Test condition and description	Value			
		min.	typical	max.	Unit
TS	Time Slot duration without resynchronization (DE input)	3,96	4	4,04	µs
TDelay	Propagation delay time between DE logical input for one node to R0, R1, and R2 logical outputs from any node	0	0,6	1,25	µs
Tsample	Sample point of protocol controller	12/16	12/16	12/16	TS

7.6.1.4.3 Transient stress capability (automotive application)

The network interface is designed to withstand automobile type transients on Data and DataB lines as defined in ISO 7637 part 1.

Pulse characteristics					
ISO pulse type	Magnitude no load	Duration	Source impedance	Period	Number of pulses
5	V_s = 36,5 V	T_d = 400 ms	R_i = 2 Ω	1 min	5
1	V_s = -50 V	t_d = 2 ms	R_i = 10 Ω	5 s	50

In addition the interface is fully functional during start engine phase.

7.6.1.4.4 Continuous stress capability (automotive application)

The network interface is designed to withstand – 24 V and +24 V voltages on Data and DataB lines.

7.6.1.4.5 Ground offset between nodes

Parameter	Test condition and description	Value			
		min.	typical	max.	Unit
Vnode-nom	Offset between the 2 nodes in nominal mode (for worst case parameters of cable and interface)	-2		+2	V
Vnode-deg	Offset between the 2 nodes in degraded mode (for worst case parameters of cable and interface)	-0,7	0	+0,7	V

Nominal mode: The network uses Data and DataB line for communication.

Degraded mode: In this case, one line is broken-down and the network uses Data or DataB line for communication.

7.6.2 Transceiver description

7.6.2.1 Driver section

Parameter	Test condition and description	Value			
		min.	typical	max.	Unit
Irec	DE = 1; Vdata = -5 V to +3,75 V; VdataB = +1,25 V to +10 V	+1,6	+1,8	+2,0	mA
	DE = 1; Vdata = +3,75 V to +5 V; VdataB = +0 V to +1,25 V	-0,10		+2,0	mA
	DE = 1; Vdata = +5 V to +10 V; VdataB = -5 V to 0 V	-0,10		+0,10	mA
Idom	DE = 0; Vdata = +1,25 V to +10 V; VdataB = -5 V to +3,75 V	+45	+50	+60	mA
	DE = 0; Vdata = 0 V to +1,25 V; VdataB = +3,75 V to +5 V	-0,10		+60	mA
	DE = 0; Vdata = -5 V to 0 V; VdataB = +5 V to +10 V	-0,10		+0,10	mA
	DE = 1; Vdata = -5 V to +10 V; VdataB = -5 V to +10 V	-0,10		+0,10	mA
OverShot	Current overshot during transition recessive --> dominant			10	mA
M-I	Static matching of current output	-5		+5	%
TON	Propagation delay of dominant current from recessive state to dominant state			200	ns
TOFF	Propagation delay of dominant current from dominant state to recessive state			200	ns

7.6.2.2 Receiver section

Parameter	Test condition and description	Value			
		min.	typical	max.	Unit
VMCR	Common mode	0,5		4,5	V
ZMC	Common mode impedance	100			kΩ
ZMD	Differencial mode impedance	100			kΩ
CMC	Input capacitance between input and ground			10	pF
CMD	Differential input capacitance between inputs			10	pF
OFFr	R1 and R2 comparators offset	-25	0	+25	mV
HYSdif	Differential comparator input hysteresis	150	200	250	mV
HYSSr	R1 and R2 comparator input hysteresis	150	200	250	mV
TDEL	Propagation delay for high to low transition, input overdrive 50 mV			150	ns
TEDH	Propagation delay for low to high transition, input overdrive 50 mV			150	ns

7.6.2.3 Polarization section

Parameter	Test condition and description		Value			
			min.	typical	max.	Unit
ZGT	Output impedance POL used by filter ± 3 mA output POL current	Frequency = 1MHz			200	Ω
		Frequency ≤ 1 kHz			100	Ω
VGTint	Internal reference for R1 and R2 used by comparators		2,375	2,5	2,625	V
VGText	Output voltage POL ± 2 mA used by filter		2,375	2,5	2,625	V

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Descriptors: road vehicles, electronic equipment, data communication equipment, data processing, information interchange, local area networks, vehicle area networks, data transmission, data link layer, physical layer.

Price based on 5 pages