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STANDARD

**ISO**  
**11519-3**

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**AMENDMENT 1**  
1995-04-01

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**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.

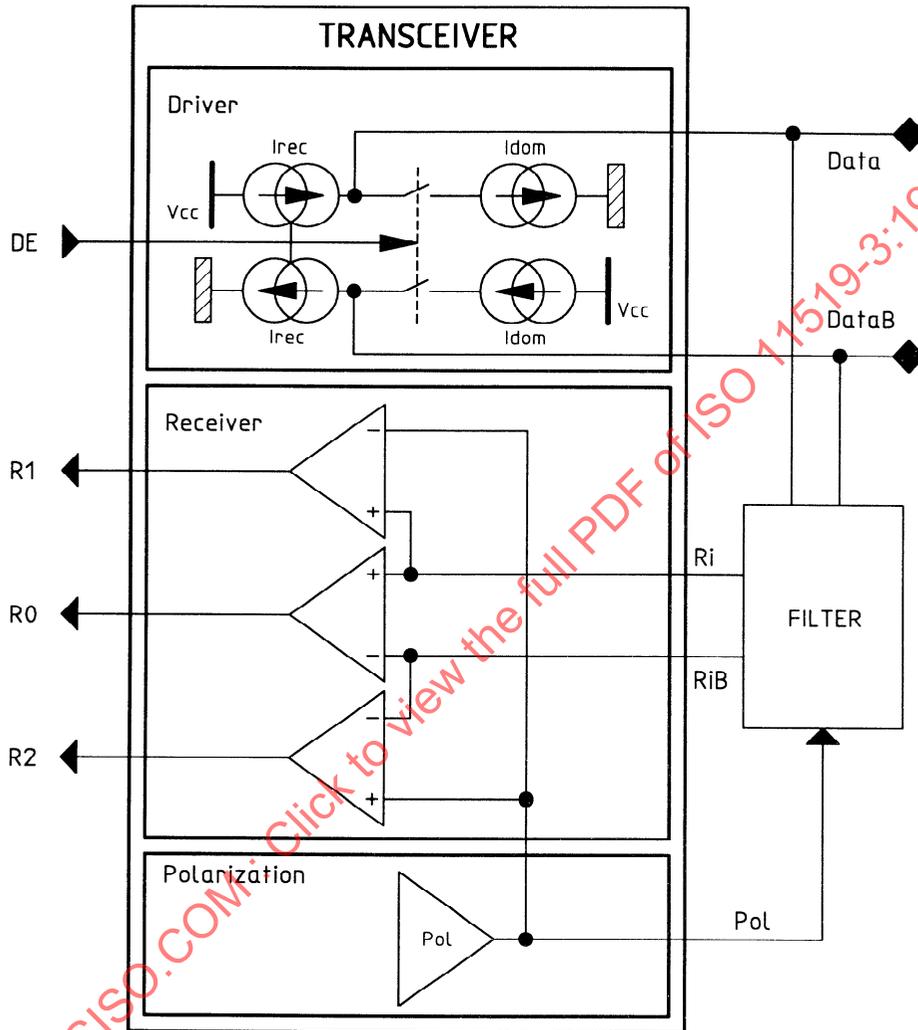


Figure 52 — 250 kTS/s VAN bus interface

7.6.1.2 Filter section

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

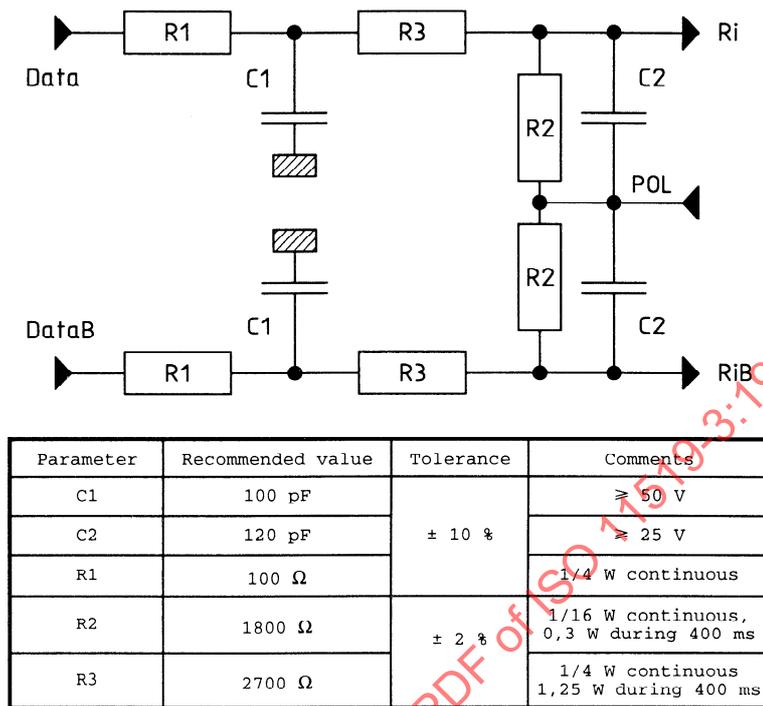


Figure 53 — 250 kTS/s filter

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                     | $V_s = 36,5 \text{ V}$ | $T_d = 400 \text{ ms}$ | $R_i = 2 \Omega$  | 1 min  | 5                |
| 1                     | $V_s = -50 \text{ V}$  | $t_d = 2 \text{ ms}$   | $R_i = 10 \Omega$ | 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<br>(for worst case parameters of cable and interface)  | -2    |         | +2   | V    |
| Vnode-deg | Offset between the 2 nodes in degraded mode<br>(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 overshoot 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   |