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**Road vehicles — Interchange of digital  
information on electrical connections  
between braking and auxiliary  
data collection systems on towed vehicles**

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**Revision History:-**

- 1.0 [March 2014] - Initial Revision.
- 1.1 [June 2014] - Corrected DTCSeverityMask in sections 6.3.2.1, 6.3.2.2, 6.3.2.3. Renamed EBS11 to EBS12 in section 6.2.2 with rate 100mS.



**Foreword:**

**Introduction:**

This document is subject to additions which will become necessary in order to keep pace with experience and technical advances. Care has been taken to ensure that these additions can be introduced in a compatible way, and care will have to be taken in the future so that such additions remain compatible with previous versions. Where possible parameters shall be provided in the same format and in the same parameter groups as ISO11992. As such it may become necessary to standardize new parameters and parameter groups coming from the ISO11992 standard.



**Road vehicles — Interchange of digital information on electrical connections between braking and auxiliary data collection systems on towed vehicles.**

## **1: Scope**

This document specifies the parameters and messages exchanged between electronically controlled braking systems, including ABS (anti-lock braking systems) and auxiliary data collection equipment (i.e. telematic systems), to ensure the interchange of digital information between systems on towed road vehicles with a maximum authorized total mass greater than 3 500 kg. The objective of the data structure is to optimize the use of the interface, while preserving a sufficient reserve.

## **2: Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11898:19931), Road vehicles— Interchange of digital information— Controller area network (CAN) for high speed communication

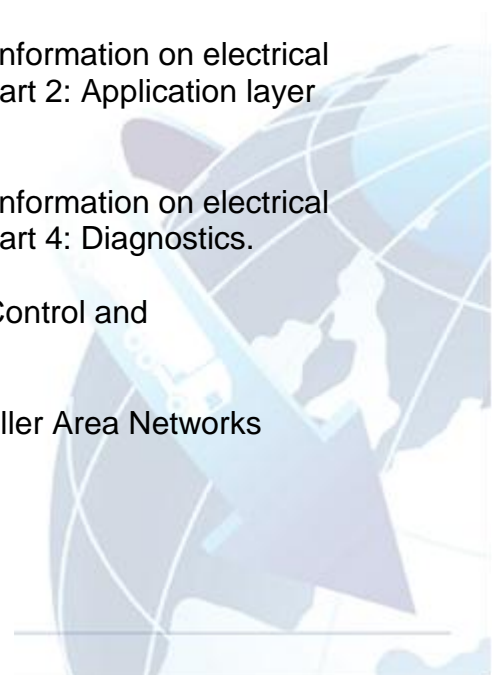
ISO 11992-1, Road vehicles— Interchange of digital information on electrical connections between towing and towed vehicles — Part 1: Physical layer and data-link layer

ISO 11992-2, Road vehicles— Interchange of digital information on electrical connections between towing and towed vehicles — Part 2: Application layer for brakes and running gear.

ISO 11992-4, Road vehicles— Interchange of digital information on electrical connections between towing and towed vehicles — Part 4: Diagnostics.

SAE J1939 - Recommended Practice for a Serial Control and Communications Vehicle Network

SAE 15765 - Road vehicles — Diagnostics on Controller Area Networks (CAN - UDS)



### **3: Terms and definitions**

### **4: Abbreviations**

### **5: General specifications**

The data link and the physical layer shall be in accordance with ISO11898.

The auxiliary data collection equipment either shall have no terminating resistor, or a switchable terminating resistor, it is prohibited to have a fixed terminating resistor inside the ECU.

In the bus termination shall be configured on the vehicle in accordance with the guidelines of the electronically controlled braking system manufacturer for the given installation.

The auxiliary data collection device shall use the source address: 170d (decimal).

The electronically controlled braking system shall either use the source address based on its position in the road train as per the ISO11992-2 standard, i.e. 200d, 192d, 184d, 176d, 168d, or it may use a fixed address of 200d.

### **6 Application layer**

#### **6.1 Message frame format**

As per ISO11992-2

#### **6.2 Parameters**

##### **6.2.1 Parameter Ranges**

As per ISO11992-2 or J1939 as required.



## 6.2.2 Mandatory Parameter Groups

ISO11992- 2: EBS12 (10ms  $\pm$  1ms repetition rate)

ISO11992- 2: EBS21 (10ms  $\pm$  1ms repetition rate)  
ISO11992- 2: EBS22 (100ms  $\pm$  10ms repetition rate)  
ISO11992- 2: EBS23 (100ms  $\pm$  10ms repetition rate)  
ISO11992- 2: EBS26 (100ms  $\pm$  10ms repetition rate)

ISO11992-2: RGE12 (100ms  $\pm$  10ms repetition rate)<sup>1</sup>  
ISO11992-2: RGE22 (100ms  $\pm$  10ms repetition rate)  
ISO11992-2: RGE23 (1000ms  $\pm$  100ms repetition rate)

J1939-71: PGN 65282 – TCan Proprietary 1 (100ms  $\pm$  10ms repetition rate)  
J1939-71: PGN 65283 – TCan Proprietary 2 (1000ms  $\pm$  100ms repetition rate)

1) If supported by the connected truck on the ISO11992 CAN bus



## 6.2.2 Parameter Specification

Name	Parameter Group	Byte / Bit	Length / Type	Notes
Reverse Gear Status	EBS12	2: 5-6	Bit	Proposed in ISO 11992-2 2013-12-02 FDIS
Emergency Braking Request	EBS12	2: 7-8	Bit	Proposed in ISO 11992-2 2013-12-02 FDIS
Truck VIN	RGE 12	5		Index Proposed in ISO 11992-2 2013-12-02 FDIS
Truck VIN	RGE 12	6		Index data content Proposed in ISO 11992-2 2013-12-02 FDIS
ABS Active	EBS21	1: 1-2	Bit	
Service Brake Active	EBS21	1: 5-6	Bit	
VDC (RSP) Active	EBS21	2: 1-2	Bit	
Wheel based Vehicle Speed	EBS21	3 – 4	Word	
Voltage Supply sufficient	EBS22	2: 1-2	Bit	
Red warning signal request.	EBS22	2: 3-4	Bit	
Amber warning signal request.	EBS22	2: 5-6	Bit	
Axle Load sum	EBS22	5 – 6	Word	
Tyre pressure sufficient	EBS23	1:1–2	Bit	Use in conjunction with Tyre/wheel identification (pressure) EBS23-byte 2
Brake lining sufficient	EBS23	1:3–4	Bit	Use in conjunction with Tyre/wheel identification (lining) EBS23-byte 3
Pneumatic Supply sufficient	EBS23	1:7–8	Bit	

Name	Parameter Group	Byte / Bit	Length / Type	Notes
Tyre/wheel identification (pressure)	EBS23	2	Byte	
Tyre/wheel identification (lining)	EBS23	3	Byte	
Tyre pressure	EBS23	5	Byte	Use in conjunction with Tyre/wheel identification (pressure) EBS23-byte 2
Brake lining	EBS23	6	Byte	Use in conjunction with Tyre/wheel identification (lining) EBS23-byte 3
Pneumatic supply pressure	EBS23	8	Byte	
Wheel speed first axle, left wheel	EBS26	1-2	Word	
Wheel speed first axle, right wheel	EBS26	3-4	Word	
Tyre/wheel identification	RGE22	5	Byte	
Axle Load	RGE22	6-7	Word	Use in conjunction with Tyre/wheel identification RGE22-byte 5
Tyre/wheel identification	RGE23	1	Byte	
Tyre Temperature	RGE23	2 -3	Word	Use in conjunction with Tyre/wheel identification RGE23-byte 1
Tyre Air leakage detection	RGE23	4-5	Word	
Tyre pressure threshold detection	RGE23	6: 1-3	Bits	Use in conjunction with Tyre/wheel identification RGE23-byte 1
Status Backup Power Supply.	65282	1: 1-2	Bit	
Status	65282	1 :3-4	Bit	

Name	Parameter Group	Byte / Bit	Length / Type	Notes
ISO7638 Power Supply.				
P4 (Yellow line)	65282	4	Byte	10 kPa/bit – range 0 to 2500 kPa (0 to 25 Bar, 0.1 Bar / bit)
Pcan (ISO11992 – demand)	65282	5	Byte	10 kPa/bit – range 0 to 2500 kPa (0 to 25 Bar, 0.1 Bar / bit)
P21 (Output pressure)	65282	6	Byte	10 kPa/bit – range 0 to 2500 kPa (0 to 25 Bar, 0.1 Bar / bit)
P22 (Output pressure)	65282	7	Byte	10 kPa/bit – range 0 to 2500 kPa (0 to 25 Bar, 0.1 Bar / bit)
P2/23 (Output pressure)	65282	8	Byte	10 kPa/bit – range 0 to 2500 kPa (0 to 25 Bar, 0.1 Bar / bit)
Trailer info Index	65283	1	Byte	Provides index for index data in byte 2.
Trailer info data	65283	2	-	Index 1 - 15: ECU Serial number ASCII Encoded  Index 16 - 32: VIN bytes ASCII Encoded  32 to 250: Not defined
Odometer	65283	3 – 6	4 bytes	5 m/bit
Connected device permitted transmit on the bus.	65283	7 :1-2	Bit	00 = not permitted, 01 = permitted



## 6.3 Diagnostic Specification

Support of diagnostics as per ISO11992-4 is optional.

The purpose of the basic diagnostics is to provide vehicle independent identification and diagnostic information.

All basic diagnostic functions and services shall be provided under all operation conditions in the default diagnostic session without the need for specific access rights.

The minimum time between UDS requests originating from the Auxiliary data collection systems shall be 10 seconds.

Auxiliary data collection systems may only make use of the UDS communication channel as defined in this document, and only if the “Connected device permitted transmit on the bus” flag in PGN65283 is 01. Other requests that are supported via diagnostics must not be sent.

These statements do not prevent additional agreements being reached between the system suppliers of the respective systems.

See ISO11992-4 for definition of diagnostic command format of the “Read Data By Identifier” and “Read DTC Information”, this document is not intended to replace the base specification.

### 6.3.1 System Information supported by Data Identifiers (DID)

Reading of DID’s shall be done once per power cycle, if the EBS unit returns a “No acknowledge” the DID shall not be requested again during that power cycle.

DID	Description
0xF194	<b>SystemSupplierECUSoftwareNumber</b> This value shall be used to reference the system supplier specific ECU software number. Record data content and format shall be ECU specific and defined by the system supplier.
0xF195	<b>SystemSupplierECUSoftwareVersionNumber</b> This value shall be used to reference the system supplier specific ECU software version number. Record data content and format shall be ECU specific and defined by the system supplier.
0xF197	<b>SystemNameOrEngineType</b>

	This value shall be used to reference the system name or engine type. Record data content and format shall be ASCII and defined by the vehicle manufacturer.

### 6.3.2 Read Diagnostic Trouble Code (DTC).

Reading of DTC's shall not be requested more often than once every ten seconds, the first request shall not be sent before two seconds after power on. If no response is received then further requests shall not be sent again during that power cycle.

#### 6.3.2.1 specification.

DTC's are stored with a Severity Information in the braking system, this allows DTC information to be requested by the auxiliary system based on the severity, the table below summarises the available severities:

Value	Description
xx1 00000b	<b>MaintenanceOnly</b> This value indicates that the failure requests a check of the vehicle at the next maintenance.
x1x 00000b	<b>CheckAtNextHalt</b> This value indicates that the failure requires a check of the vehicle at the next halt.
1xx 00000b	<b>CheckImmediately</b> This value indicates that the failure requires an immediate check of the vehicle.

However, to minimise load on the EBS unit is recommended to request information for all severity types in one request, i.e. 1110 0000b (0xF0).

#### 6.3.2.2 Number of DTC's.

The Auxiliary data collection systems may request the number of DTC's matching a given severity record by issuing the command:

'ReportNumberOfDTCBySeverityMaskRecord, 0xE0,..'



### **6.3.2.3 Read DTC's by severity record.**

The Auxiliary data collection systems may request a list of DTC's with their status (e.g. Confirmed DTC) matching a given severity record by issuing the command:

'ReportDTCBySeverityMaskRecord, 0xE0,..'

Note: The meaning on the DTC codes is supplier dependent and not standardised.

