CiA Work Draft Proposal 413

CANopen

Device Profile for Truck Gateways

Part 2: Application objects for brake and running gear

This is a work draft proposal and shall not be implemented

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HISTORY

Date	Changes
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CONTENTS

1 Scope

Part 2 of CANopen device profile for truck gateways defines the application objects for brake and running gear equipment. The normative references, definitions, acronyms, and abbreviations given in part 1 apply to this part, too.

1.1 Resolution, scaling and offset object definitions

The default values of the resolution_numerator, resolution_denominator minimum_value_range, maximum_value_range and offset objects are defined in ISO 11992-2. These values are given in brackets for convenience, however, they shall be double-checked with the ISO document. The application object's dimension is also defined in the ISO 11992-2 standard. The dimension is given in brackets for convenience and should be double-checked with the ISO document.

2 Objects for brake and running gear equipment

2.1 Park brake demand value (6000h); scaling and offset (6001h)

The requested brake pressure value of the parking brake as a percentage of maximums. (The value is dimensionless).

Object Description

INDEX	6000h
Name	park_brake_demand_value
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	6001h
Name	park_brake_demand_value_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	4

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1000)

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.2 Retarder demand value (6002h); scaling and offset (6003h)

This object provides the demanded value of the retarder on the towed vehicle as a percentage of the absolute peak torque of retarder. (The value is dimensionless).

Object Description

INDEX	6002h
Name	retarder_demand_value
Object Code	Array
Data Type	Signed8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Signed8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed8
Default Value	7Dh (+125)

Sub-Index	3h
Description	minimum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed8
Default Value	83h (-125)

Object Description

INDEX	6003h
Name	retarder_demant_value_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	64h (100)

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	83h (-125)

2.3 Service break demand value (6004h); scaling and offset (6005h)

This object provides the requested brake pressure value of the service brake demanded by the driver. (Dimension is *k*Pa).

Object Description

INDEX	6004h
Name	service_break_demand_value
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	6005h
Name	service_break_demand_value_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1388h (5,000)

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	100h (256)

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.4 Wheel-based vehicle speed (6006h); scaling and offset (6007h)

This object provides the actual speed of the vehicle (positive value for forward and backward speed) calculated as the average of the wheel speeds of one axle influenced by slip and filtered by a frequency of 5 Hz to20 Hz (from braking system). (Dimension is km/h).

Object Description

INDEX	6006h
Name	wheel_based_vehicle_speed
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	FA00h (64,000)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	6007h
Name	wheel_based_vehicle_speed_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1,000)

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	100h (256)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.5 Reference retarder torque (6008h); scaling and offset (6009h)

This object is the 100% reference value for all defined indicated retarder torque parameters. It is only defined once and does not change if a different retarder torque map becomes valid. (The Dimension is Nm).

Object Description

INDEX	6008h
Name	reference_retarder_torque
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	6009h
Name	reference_retarder_torque_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.6 Actual percentage of retarder peak torque (600Ah); scaling and offset (600Bh)

This object provides the actual torque of the retarder as negative percentage of maximum. (The value is dimensionless).

Object Description

INDEX	600Ah
Name	actual_percentage_of_retarder_peak_torque
Object Code	Array
Data Type	Signed8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Signed8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Signed8
Default Value	7Dh (+125)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Signed8
Default Value	83h (-125)

Object Description

INDEX	600Bh
Name	actual_percentage_of_retarder_peak_torque_ scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	64h (100)

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	83h (-125)

2.7 Axle load sum (600Ch); scaling and offset (600Dh)

This object provides the sum of the static vertical loads of the vehicle axles. (Dimension is kg).

Object Description

INDEX	600Ch
Name	axle_load_sum
Object Code	Array
Data Type	Unsignd16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	600Dh
Name	axle_load_sum_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	2

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.8 Pneumatic supply pressure (600Eh); scaling and offset (600Fh)

This object provides the actual supply pressure of the reservoir of the braking system. (Dimension is Pa)

Object Description

INDEX	600Eh
Name	pneumatic_supply_pressure
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	600Fh
Name	pneumatic_supply_pressure_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.9 Tyre/wheel identification (6010h)

This object provides the identification number of the tyre or wheel. The identification number specifies the tyre or wheel position on each axle (bit 1 to 4) and the number of axles starting from the front vehicle (bit 5 to 8). The following data format shall be applied:

MSB LSB

High Bits	Low Bits
7 4	3 0
0 = axle position cannot be identified	0 = wheel position cannot be identified
1 to 15 = axle position	1 to 15 = wheel position

The identification number is used in conjunction with all tyre, wheel or wheel-end related information in the message. The ID value 0 shall be used if the position of tyre, wheel, wheel-end or axle cannot be identified.
The tyre/wheel identification is labeled sequentially from vehicle symmetric line starting from ‘9’ incrementing on the right side and from ‘7’ decrementing on the left side. ‘8’ is used for one wheel on the symmetric line (see Fig. 10 in ISO 11992-2).

Object Description

INDEX	6010h
Name	tyre/wheel_identification
Object Code	Variable
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Access	Constant
PDO Mapping	Optional
Value Range	Unsigned 8
Default Value	FFh

2.10 Brake lining (6011h); scaling and offset (6012h)

This object provides the actual relative value of brake lining of a specific brake. (The value is dimensionless).

Object Description

INDEX	6011h
Name	brake_lining
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	6012h
Name	brake_lining_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	4

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1,000)

Sub-Index	3h
Description	Offset
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.11 Brake temperature (6013h); scaling and offset (6014h)

This object provides the actual brake temperature. (Dimension is °C)

Object Description

INDEX	6013h
Name	brake_temperature
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	6014h
Name	brake_temperature_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	Ah (10)

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.12 Tyre pressure (6015h); scaling and offset (6016h)

This object provides the actual tyre pressure without corrections. (Dimension is k/Pa)

Object Description

INDEX	6015h
Name	tyre_pressure
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	6016h
Name	tyre_pressure_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	2710h (10,000)

Sub-Index	2h
Description	Resolution_denominator
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.13 Towing vehicle retarder control active/passive (6017h)

This object indicates the active/passive state in all cases when the installed retarder is applied by the driver's demand or by other systems (brakes).

Note: 'Applied' means that the retarder starts to increase its torque and decelerates the vehicle.

Bit value definitions: 00 – retarder 'passive'
01 – retarder 'active'

Object Description

INDEX	6017h
Name	towing_vehicle_retarder_control_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.14 Towed vehicle retarder control active/passive (6018h)

This object indicates the active/passive state in all cases when the installed retarder is applied by the driver's demand or by other systems (brakes).

Note: 'Applied' means that the retarter starts to increase its torque and decelerates the vehicle.

Bit value definitions: 00 – retarder 'passive'
01 – retarder 'active'

Object Description

INDEX	6018h
Name	towed_vehicle_retarder_control_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.15 Vehicle service brake active/passive (6019h)

This object indicates if the service brake of the towed vehicle is active/passive, by observing the brake pressure.

Bit value definitions: 00 – vehicle service brake passive
01 – vehicle service brake active

Object Description

INDEX	6019h
Name	vehicle_service_brake_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.16 Automatic towed vehicle braking active/passive (601Ah)

This object indicates the automatic towed vehicle braking is active/passive. This function will occur when the pneumatic supply is insufficient or not connected.

Bit value definitions: 00 – vehicle automatic braking passive
01 – vehicle automatic braking active

NOTE: According to ECE Regulation 13 the brake pressure in the trailer may be suppressed under certain conditions in case of an automatic braking. This parameter reflects the different conditions as follows:

Bit value definitions: 00 – pneumatic supply is insufficient or not connected, brake pressure is suppressed
01 – pneumatic supply is insufficient or not connected, brake pressure is not suppressed – i.e. trailer is really braked
11 – pneumatic supply is sufficient and connected, automatic braking function is not available

Object Description

INDEX	601Ah
Name	automatic_towed_vehicle_braking_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	FALSE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	FALSE

2.17 Towing vehicle ABS active/passive (601Bh)

This object indicates if the ABS is active/passive. The signal is set active when the ABS starts to modulate the wheel brake pressure, and is reset to passive when all wheels are in stable condition for a certain time period. The signal can also be set active when driven wheels are in high slip (e. g. caused by retarder).

Bit value definitions: 00 – vehicle ABS passive, but installed
01 – vehicle ABS active

Object Description

INDEX	601Bh
Name	towing_vehicle_ABS_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.18 Towed vehicle ABS active/passive (601Ch)

This object indicates if the ABS is active/passive. The signal is set active when the ABS starts to modulate the wheel brake pressure, and is reset to passive when all wheels are in stable condition for a certain time period. The signal can also be set active when driven wheels are in high slip (e. g. caused by retarder).

Bit value definitions: 00 – vehicle ABS passive, but installed
01 – vehicle ABS active

Object Description

INDEX	601Ch
Name	towed_vehicle_ABS_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.19 Vehicle electrical supply sufficient/insufficient (601Dh)

This object indicates the actual supply voltage is sufficient/insufficient for proper brake function (including over voltage).

Bit value definitions: 00 – vehicle electrical supply insufficient
01 – vehicle electrical supply sufficient

Object Description

INDEX	601Dh
Name	vehicle_electrical_supply_sufficient/insufficient
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.20 Vehicle pneumatic supply sufficient/insufficient (601Eh)

Signal indicating the actual supply pressure of the reservoir of the braking system is insufficient or sufficient.

Bit value definitions: 00 – vehicle pneumatic supply insufficient
01 – vehicle pneumatic supply sufficient

Object Description

INDEX	601Eh
Name	vehicle_pneumatic_supply_sufficient/insufficient
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	Rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.21 Spring brake installed (601Fh)

This object indicates if the vehicle has one or more axle(s) fitted with spring brakes.

Bit value definitions: 00 – vehicle without spring brakes
01 – vehicle with spring brakes

Object Description

INDEX	601Fh
Name	spring_brake_installed
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.22 Electrical load proportional function (6020h)

Signal indicating vehicle is equipped with an electrical load proportional function.

Bit value definitions: 00 – vehicle without electrical load proportional function
01 – vehicle with electrical load proportional function

Object Description

INDEX	6020h
Name	electrical_load_proportional_function
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.23 ABS off-road request (6021h)

This object indicates the request to activate the ABS off-road function. The switch signal is independent of an actual ABS control situation.

Bit value definitions: 00 – vehicle ABS off-road switch off
01 – vehicle ABS off-road switch on

Object Description

INDEX	6021h
Name	ABS_off-road_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.24 ASR brake control active/passive (6022h)

This object indicates that ASR brake control is active/passive. Active means that ASR actually controls wheel brake pressure at one or more wheels of the driven axle(s).

Bit value definitions: 00 – ASR brake control passive, but installed
01 – ASR brake control active

Object Description

INDEX	6022h
Name	ASR_brake_control_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.25 ASR engine control active/passive (6023h)

This object indicates that ASR engine control is active/passive. Active means that ASR actually tries to control the engine. This status is independent of other control commands to the engine (e. g. from the transmission) which may have higher priority.

Note: ‘Active does not mean ‘installed or ‘enabled’, but indicates an actual ASR situation

Bit value definitions: 00 – ASR engine control passive, but installed
01 – ASR engine control active

Object Description

INDEX	6023h
Name	ASR_engine_control_active/passive
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.26 Pneumatic control line (6024h)

This object indicates that the towing vehicle has a pneumatic control line for the towed vehicle service braking system.

Bit value definitions: 00 – Towing vehicle without pneumatic control line
01 – Towing vehicle with pneumatic control line

Object Description

INDEX	6024h
Name	pneumatic_control_line
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.27 Two electrical circuits brake demand value (6025h)

This object indicates that the service brake demand value sent by the towing vehicle can generated by one or two independent electrical braking circuit(s).

Bit value definitions: 00 – One electrical circuit brake available
01 – Two electrical circuit brake available

Object Description

INDEX	6025h
Name	two_electrical_circuits_brake_demant_value
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.28 Tyre pressure sufficient/insufficient (6026h)

This object indicates that the tyre pressure is insufficient, i. e. out of a pressure range recommended by tyre or vehicle manufacturer to ensure an optimized operation with regard to fuel consumption of the vehicle and to lifetime of the tyre.

Bit value definitions: 00 – Tyre pressure insufficient
01 – Tyre pressure sufficient

Object Description

INDEX	6026h
Name	tyre_pressure_sufficient/insufficient
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.29 Brake lining sufficient/insufficient (6027h)

This object indicates that the brake lining is sufficient/insufficient.

Bit value definitions: 00 – Brake linings insufficient
01 – Brake linings sufficient

Object Description

INDEX	6027h
Name	brake_lining_sufficient/insufficient
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.30 Brake temperature status (6028h)

This object indicates that the brake temperature is higher than a specific level.

Bit value definitions: 00 – Brake linings out of range
01 – Brake linings normal

Object Description

INDEX	6028h
Name	rake_temperature_status
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.31 Brake light switch (6029h)

This object indicates that the brake pedal is being pressed.

Bit value definitions: 00 – Brake light switch off
01 – Brake light switch on

Object Description

INDEX	6029h
Name	brake_light_switch
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.32 Red warning signal request (602Ah)

Request from the towed vehicle to the commercial vehicle to activate the red warning signal on the commercial vehicle, which indicates certain specified failures within the braking equipment of the towed vehicle.

Bit value definitions: 00 – No towed vehicle failure to be indicated by the red warning signal
01 – Towed vehicle failure to be indicated by the red warning signal

Object Description

INDEX	602Ah
Name	red_warning_signal_requested
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.33 Amber warning signal requested (602Bh)

Request from the towed vehicle to the commercial vehicle to activate the amber warning signal on the commercial vehicle.

Bit value definitions: 00 – No towed vehicle failure to be indicated by the amber warning signal
01 – Towed vehicle failure to be indicated by the amber warning signal

Object Description

INDEX	602Bh
Name	amber_warning_signal_requested
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.34 Electrical supply of non-braking systems (602Ch)

This object indicates the status of the supply of non-braking systems.

Bit value definitions: 00 – Supply of non-braking systems switched off
01 – Supply of non-braking systems switched on

Object Description

INDEX	602Ch
Name	electrical_supply_of_non-braking_systems
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.35 Loading ramp approach assistance (602Dh)

The parameter indicates whether the loading ramp approach assistance is activated. The loading ramp approach assistance measures the distance to the loading ramp while reversing and applies the vehicle brakes accordingly.

Bit value definitions: 00 – Loading ramp approach assistance not active
01 – Loading ramp approach assistance active

Object Description

INDEX	602Dh
Name	loading_ramp_approach_assistance
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.36 VDC active (602Eh)

Signal which indicates that Vehicle Dynamic Control (VDC) is active/passive. VDC contains Roll Over Prevention (ROP) and/or Yaw Control (YC). Active means that VDC actually controls the engine torque (in case of a commercial vehicle) or the wheel brake pressure at one or more wheels.

NOTE: “active” does not mean “installed” or “enabled”, but indicates an actual VDC situation

Bit value definitions: 00 – VDC passive, but installed
01 – VDC active

Object Description

INDEX	602Eh
Name	VDC_active
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.37 Road curvature (602Fh); scaling and offset (6030h)

Estimated value of the current road curvature. Positive values are used for left curves. (Dimension is 1/km).

Object Description

INDEX	602Fh
Name	road_curvature
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Signed16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	FF06h (-250)

Object Description

INDEX	6030h
Name	road_curvature_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	80h (128)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	FF06h (-250)

2.38 Wheel speed difference main axle (6031h); scaling and offset (6032h)

Difference between the wheel speed at the right side and the left side of the main axle, calculated as $V_{difference} = V_{right} - V_{left}$ and filtered by frequency of 5 Hz to 20 Hz. (Dimension is 1/256 km/h).

Object Description

INDEX	6031h
Name	wheel_speed_difference_main_axle
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Signed16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	7Dh (125)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	Rw
PDO Mapping	No
Value Range	Signed16
Default Value	FF83h (-125)

Object Description

INDEX	6032h
Name	wheel_speed_difference_main_axle_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	100h (256)

Sub-Index	3h
Description	Offset
Access	Rw
PDO Mapping	No
Value Range	Signed16
Default Value	FF83h (-125)

2.39 Supply line braking request (6033h)

Signal indicating the trailer is requesting to be braked by the commercial vehicle by means of bleeding the pneumatic supply line.

Bit value definitions: 00 – No supply line braking request
01 – Supply line braking request

Object Description

INDEX	6033h
Name	supply_line_braking_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.40 Spring brake engaged (6034h)

Signal indicating the vehicle spring brake is engaged.

Bit value definitions: 00 – Vehicle spring brake is released (is not braking the vehicle)
01 – Vehicle spring brake is engaged (is braking the vehicle)

Object Description

INDEX	6034h
Name	spring_brake_engaged
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.41 Driven axle load (6035h); scaling and offset (6036h)

This object provides the actual static vertical load on driver axle of the commercial vehicle. In case of more than one driven axle the value of the axle with the highest vertical load is transmitted. (Dimension is kg).

Object Description

INDEX	6035h
Name	driven_axle_load
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	6036h
Name	driven_axle_load_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	2

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.42 Nominal vehicle body level, front axle (6037h); scaling and offset (6038h)

Actual nominal vehicle body height. In case of regulation by “level change request, from axle” this value is the actual vehicle body height at the front axle referred to ground. (Dimension is mm).

Object Description

INDEX	6037h
Name	nominal_vehicle_body_level_front_axle
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	6038h
Name	nominal_vehicle_body_level_front_axle_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1,000)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.43 Nominal vehicle body level, rear axle (6039h); scaling and offset (603Ah)

This object provides the actual nominal vehicle body height. In case of regulation by "level change request, rear axle" this value is the actual vehicle body height at the rear axle referred to ground. (Dimension is mm).

Object Description

INDEX	6039h
Name	nominal_vehicle_body_level_rear_axle
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	603Ah
Name	nominal_vehicle_body_level_rear_axle_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1,000)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.44 Relative vehicle body level, front axle (603Bh); scaling and offset (603Ch)

This object provides the actual nominal vehicle body height. In case of regulation by "level change request, front axle" this value is the actual vehicle body height at the front axle referred to ride height normal level 1. (Dimension is mm)

Object Description

INDEX	603Bh
Name	relative_vehicle_body_level_front_axle
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Signed16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	7DFFh (32,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8300h (-32,000)

Object Description

INDEX	603Ch
Name	relative_vehicle_body_level_front_axle_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1,000)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8300h (-32,000)

2.45 Relative vehicle body level, rear axle (603Dh); scaling and offset (603Eh)

This object provides the actual nominal body height. In case of regulation by "level change request, front axle" this value is the actual vehicle body height at the rear axle referred to ride height normal level 1. (Dimension is mm).

Object Description

INDEX	603Dh
Name	relative_vehicle_body_level_rear_axle
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Signed16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	7DFFh (32,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8300h (-32,000)

Object Description

INDEX	603Eh
Name	relative_vehicle_body_level_rear_axle_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	3E8h (1,000)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8300h (-32,000)

2.46 Level control request (603Fh)

This command object enables or disables the automatic level control. A request to enable or to disable the level control shall be sent in 5 successive followed by messages with "level control request" set to "take no action". Less than 5 messages are allowed if the receiver acknowledges through "level control".

Bit value definitions: 00 – disable level control
01 – enable level control
11 – take no action

Object Description

INDEX	603Fh
Name	level_control_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.47 Level control (6040h)

This object indicates that the automatic level control is enabled or disabled.

Bit value definitions: 00 – level control disabled
01 – level control enabled

Object Description

INDEX	6040h
Name	level_control
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.48 Level change request, front axle (6041h)

This command object controls the body height [up (lifting)/down (lowering)] for the front axle. This request shall be sent as long as a lifting/lowering is proceeded.

Bit value definitions: 00 – vehicle body up (lifting)
01 – vehicle body down (lowering)
11 – take no action

Object Description

INDEX	6041h
Name	level_change_request_front_axle
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.49 Level change request, rear axle (6042h)

This command object controls the body height [up (lifting)/down (lowering)] for the rear axle. This request has to be sent as long as a lifting/lowering shall proceed.

Bit value definitions: 00 – vehicle body up (lifting)
01 – vehicle body down (lowering)
11 – take no action

Object Description

INDEX	6042h
Name	level_change_request_rear_axle
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.50 Level change, front axle (6043h)

This object indicates the level change of the body height at the front axle due to any external requests.

Bit value definitions: 00 – vehicle body lifting/lowering not active
01 – vehicle body lifting/lowering active

Object Description

INDEX	6043h
Name	level_change_front_axle
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.51 Level change, rear axle (6044h)

This object indicates the level change of the body height at the rear axle due to any external request.

Bit value definitions: 00 – vehicle body lifting/lowering not active
01 – vehicle body lifting/lowering active

Object Description

INDEX	6044h
Name	level_change_rear_axle
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.52 Lift axle 1 position request (6045h)

This command object controls the lift axle position/tag axle load condition. A request to control the lift axle position/tag axle load condition shall be send in 5 successive messages followed by messages with "lift axle position request" set to "take no action". Less than 5 massages are allowed if the receiver acknowledges via "lift axle 1 position".

Note: Numbering of lift axles starts at front axle.

Bit value definitions: 00 – Lift axle position down/tag axle loaded
01 – Lift axle position up/tag axle unloaded
11 – take no action

Object Description

INDEX	6045h
Name	lift_axle_1_position_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.53 Lift axle 2 position request (6046h)

This command object controls the lift axle position/tag axle load condition. A request to control the lift axle position / tag axle load condition shall be send in 5 successive messages followed by messages with "lift axle position request" set to "take no action". Less than 5 massages are allowed if the receiver acknowledges via "lift axle 2 position".

Note: Numbering of lift axles starts at front axle.

Bit value definitions: 00 – Lift axle position down/tag axle loaded
01 – Lift axle position up/tag axle unloaded
11 – take no action

Object Description

INDEX	6046h
Name	lift_axle_2_position_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.54 Lift axle 1 position (6047h)

This object indicates the lift axle position/tag axle load condition.

Note: Numbering of lift axles starts at front axle.

Bit value definitions: 00 – Lift axle position down/tag axle loaded
01 – Lift axle position up/tag axle unloaded

Object Description

INDEX	6047h
Name	lift_axle_1_position
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.55 Lift axle 2 position (6048h)

This object indicates the lift axle position/tag axle load condition.

Note: Numbering of lift axles starts at front axle.

Bit value definitions: 00 – Lift axle position down/tag axle loaded
01 – Lift axle position up/tag axle unloaded

Object Description

INDEX	6048h
Name	lift_axle_2_position
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.56 Steering axle locking request (6049h)

This command object locks the steering axle. A request to lock or to unlock the steering axle shall be send in 5 successive messages with "steering axle locking request" set to "take no action". Less than 5 messages are allowed if the receiver acknowledges through "steering axle locking".

Bit value definitions: 00 – unlock steering axle
01 – lock steering
11 – take no action

Object Description

INDEX	6049h
Name	steering_axle_locking_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.57 Steering axle locking (604Ah)

This object indicates the actual steering axle locking status.

Bit value definitions: 00 – steering axle unlocked
01 – steering axle locked

Object Description

INDEX	604Ah
Name	steering_axle_locking
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.58 Traction help (load transfer) request (604Bh)

This command object controls the lift axle position/tag axle load condition to transfer more load on the driven axle of the towing vehicle. A request to switch the traction help on or off shall be sent in 5 successive messages followed by messages with "traction help request" set to "take no action". Less than 5 messages are allowed if the receiver acknowledges through "traction help".

Bit value definitions: 00 – no traction help request
01 – traction help request
11 – take no action

Object Description

INDEX	604Bh
Name	traction_help_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.59 Traction help (load transfer) (604Ch)

This object indicates that a load transfer is active.

Bit value definitions: 00 – traction help (load transfer) inactive
01 – traction help (load transfer) active

Object Description

INDEX	604Ch
Name	traction_help
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.60 Ride height request (604Dh)

This command object activates a normal ride by body height. The normal levels 1 and 2 are trailer specific body heights. A request to activate a normal level shall be sent in 5 successive messages followed by messages with "ride height request" set to "take no action". Less than 5 messages are allowed if the receiver already acknowledges through "leveling control system, ride height level".

Bit value definitions: 00 – normal level 1
01 – normal level 2
11 – take no action

Object Description

INDEX	604Dh
Name	ride_height_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.61 Levelling control system, ride height level (604Eh)

This object indicates the body height position of the vehicle as an answer to "ride height request".

Bit value definitions: 00 – vehicle body not at requested normal level
01 – vehicle body at requested normal level

Object Description

INDEX	604Eh
Name	levelling_control_system_ride_height_level
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.62 Normal level (604Fh)

This object indicates the normal level of the vehicle independently of a specific request.

Bit value definitions: 00 – normal level 1
01 – normal level 2
11 – not available

Object Description

INDEX	604Fh
Name	normal_level
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.63 Ramp level request (6050h)

This command object controls the body height to a level programmed and memorized in the ECU. A request to activate one ramp level shall be sent 5 successive messages followed by messages with "ramp level request" set to "take no action". Less than 5 messages are allowed if the receiver acknowledges through " ramp level".

Bit value definitions: 00 – ramp level 1
01 – ramp level 2
11 – take no action

Object Description

INDEX	6050h
Name	ramp_level_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.64 Ramp level (6051h)

This object indicates the level of the body height as an answer to "ramp level request".

Bit value definitions: 00 – vehicle body not at requested ramp level
01 – vehicle body at requested ramp level

Object Description

INDEX	6051h
Name	ramp_level
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.65 Ramp level position (6052h)

This object indicates the ramp level position of the vehicle independently of a specific request.

Bit value definitions: 00 – ramp level 1
01 – ramp level 2

Object Description

INDEX	6052h
Name	ramp_level_position
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.66 Ramp level storage request (6053h)

This command object stores the actual body height level as new programmed and memorized ramp level 1 or 2 in the ECU. A request to store a ramp level shall be sent in 5 successive messages followed by messages with " ramp level storage request" set to "take no action". Less than 5 messages are allowed if the receiver acknowledges through "ramp level storage".

Bit value definitions: 00 – store ramp level 1
01 – store ramp level 2
11 – take no action

Object Description

INDEX	6053h
Name	ramp_level_storage_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.67 Ramp level storage (6054h)

This object indicates the storage of a new ramp level in the ECU.

Bit value definitions: 00 – no new ramp level storage request
01 – new ramp level stored

Object Description

INDEX	6054h
Name	ramp_level_storage
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.68 Stop level change request (6055h)

This command object stops immediately any change of the actual body height level. This request shall be sent until the receiver acknowledges via "stop acknowledges".

Bit value definitions: 00 – no stop request
01 – stop request
11 – take no action

Object Description

INDEX	6055h
Name	stop_level_change_request
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.69 Stop level change acknowledge (6056h)

This object indicates the stop of any level change due to a "stop request".

Bit value definitions: 00 – no stop request
01 – level change stopped

Object Description

INDEX	6055h
Name	stop_level_change_acknowledge
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.70 Parking and trailer air pressure (6057h); scaling and offset (6058h)

This object provides the pneumatic pressure in the circuit or reservoir for the parking brake and the trailer supply. (Dimension is kPa).

Object Description

INDEX	6057h
Name	parking_and_trailer_air_pressure
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	6058h
Name	parking_and_trailer_air_pressure_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.71 Auxiliary equipment supply pressure (6059h); scaling and offset (605Ah)

This object provides the pneumatic pressure in the auxiliary circuit. (Dimension is kPa).

Object Description

INDEX	6059h
Name	auxiliary_equipment_supply_pressure
Object Code	Array
Data Type	Unsigned8
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	Unsigned8
Default Value	FFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	FAh (250)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	rw
PDO Mapping	No
Value Range	Unsigned8
Default Value	0

Object Description

INDEX	605Ah
Name	auxiliary_equipment_supply_pressure_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	8

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.72 Tyre pressure threshold detection (605Bh)

This object indicates the pressure level of the tyre.

Bit value definitions:
000 – extreme over pressure
001 – over pressure
010 – no warning pressure
011 – under pressure
100 – extreme under pressure
101 – reserved
110 – error indicator
111 – not avalaible

Object Description

INDEX	605Bh
Name	tyre_pressure_threshold_detection
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	3h
Default Value	3h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	3h
Description	Bit_3
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

2.73 Air leakage detection (605Ch); scaling and offset (605Dh)

This object provides the pressure loss of a tyre. (Dimension is 0.1Pa/s)

Object Description

INDEX	605Ch
Name	air_leakage_detection
Object Code	Array
Data Type	Unsigned16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Unsigned16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Unsigned16
Default Value	0

Object Description

INDEX	605Dh
Name	Air_leakage_detection_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	Ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	Rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	Rw
PDO Mapping	No
Value Range	Signed16
Default Value	FAFFh (64,255)

Sub-Index	3h
Description	Offset
Access	Rw
PDO Mapping	No
Value Range	Signed16
Default Value	0

2.74 Tyre temperature (605Eh); scaling and offset (605Fh)

This object provides the temperature measured by the tyre module. (Dimension is °C).

Object Description

INDEX	605Eh
Name	tyre_temperature
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	value
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Signed16
Default Value	FFFFh

Sub-Index	2h
Description	maximum_value_range
Entry Category	Optional
Access	ro
PDO Mapping	No
Value Range	Signed16
Default Value	D8E0h (55,520)

Sub-Index	3h
Description	minimum_value_range
Entry Description	Optional
Access	ro
PDO Mapping	No
Value Range	Signed16
Default Value	DDE0h (-8,736)

Object Description

INDEX	605Fh
Name	tyre_temperature_scaling_and_offset
Object Code	Array
Data Type	Signed16
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	No
Value Range	1h to 3h
Default Value	No

Sub-Index	1h
Description	Resolution_numerator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	1

Sub-Index	2h
Description	Resolution_denominator
Entry Category	Optional
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	20h (32)

Sub-Index	3h
Description	Offset
Access	rw
PDO Mapping	No
Value Range	Signed16
Default Value	DDE0h (-8,736)

2.75 Tyre module power supply (6060h)

This object indicates if the power supply of the tyre module is sufficient to achieve the specified performance of the module.

Bit value definitions: 00 – insufficient power supply
01 – sufficient power supply

Object Description

INDEX	6060h
Name	tyre_module_power_supply
Object Code	Array
Data Type	Boolean
Category	Optional

Entry Category

Sub-Index	0h
Description	Number_of_entries
Entry Category	Mandatory
Access	ro
PDO Mapping	Optional
Value Range	2h
Default Value	2h

Sub-Index	1h
Description	Bit_1
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE

Sub-Index	2h
Description	Bit_2
Entry Category	Mandatory
Access	rw
PDO Mapping	Optional
Value Range	Boolean
Default Value	TRUE