

MOST

Media Oriented Systems Transport

Multimedia and Control
Networking Technology

Specification For Function Block Vehicle

Rev 1.6

09/2002

Version 1.6-00



Legal Notice

COPYRIGHT

© Copyright 1999 - 2002 MOST Cooperation. All rights reserved.

LICENSE DISCLAIMER

Nothing on any MOST Cooperation Web Site, or in any MOST Cooperation document, shall be construed as conferring any license under any of the MOST Cooperation or its members or any third party's intellectual property rights, whether by estoppel, implication, or otherwise.

CONTENT AND LIABILITY DISCLAIMER

MOST Cooperation or its members shall not be responsible for any errors or omissions contained at any MOST Cooperation Web Site, or in any MOST Cooperation document, and reserves the right to make changes without notice. Accordingly, all MOST Cooperation and third party information is provided "AS IS". In addition, MOST Cooperation or its members are not responsible for the content of any other Web Site linked to any MOST Cooperation Web Site. Links are provided as Internet navigation tools only.

MOST COOPERATION AND ITS MEMBERS DISCLAIM ALL WARRANTIES WITH REGARD TO THE INFORMATION (INCLUDING ANY SOFTWARE) PROVIDED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply to you.

In no event shall MOST Cooperation or its members be liable for any damages whatsoever, and in particular MOST Cooperation or its members shall not be liable for special, indirect, consequential, or incidental damages, or damages for lost profits, loss of revenue, or loss of use, arising out of or related to any MOST Cooperation Web Site, any MOST Cooperation document, or the information contained in it, whether such damages arise in contract, negligence, tort, under statute, in equity, at law or otherwise.

FEEDBACK INFORMATION

Any information provided to MOST Cooperation in connection with any MOST Cooperation Web Site, or any MOST Cooperation document, shall be provided by the submitter and received by MOST Cooperation on a non-confidential basis. MOST Cooperation shall be free to use such information on an unrestricted basis.

TRADEMARKS

MOST Cooperation and its members prohibit the unauthorized use of any of their trademarks. MOST Cooperation specifically prohibits the use of the MOST Cooperation LOGO unless the use is approved by the Steering Committee of MOST Cooperation.

SUPPORT AND FURTHER INFORMATION

For more information on the MOST technology, please contact:

MOST Cooperation

Administration
P. O. Box 4327
D-76028 Karlsruhe
Germany

Tel: (+49) (0) 721 966 50 00

Fax: (+49) (0) 721 966 50 01

E-mail: contact@mostcooperation.com

Web: www.mostcooperation.com



© Copyright 1999 - 2002 MOST Cooperation
All rights reserved

MOST is a registered trademark

Contents

| | | |
|----------|------------------------------------|-----------|
| 1 | ABSTRACT..... | 9 |
| 1.1 | Introduction | 9 |
| 1.2 | Function Survey | 10 |
| 2 | REFERENCE | 12 |
| 2.1 | Data types | 12 |
| 2.2 | Functions | 12 |
| 2.2.1 | AuxiliaryFuel | 12 |
| 2.2.2 | Battery Property..... | 13 |
| 2.2.3 | BrakeFluid Property..... | 13 |
| 2.2.4 | Cabriolet Property | 14 |
| 2.2.5 | CarNetStatus Property | 14 |
| 2.2.6 | CarOwner Property..... | 15 |
| 2.2.7 | CentralLocking Property..... | 15 |
| 2.2.8 | ChassisNumber Property | 15 |
| 2.2.9 | ConstructionYear Property | 16 |
| 2.2.10 | CoolingWaterLevel Property | 16 |
| 2.2.11 | CoolingWaterPressure Property..... | 16 |
| 2.2.12 | CoolingWaterTemp Property..... | 17 |
| 2.2.13 | Crash Property | 17 |
| 2.2.14 | CruiseControl Property..... | 18 |
| 2.2.15 | DashboardIllu Property..... | 18 |
| 2.2.16 | Distance Property | 19 |
| 2.2.17 | DoorLock Property | 19 |
| 2.2.18 | DoorOpen Property | 20 |
| 2.2.19 | DriverId Property | 20 |
| 2.2.20 | EngineDesc Property | 21 |
| 2.2.21 | EngineOffTime Property..... | 21 |
| 2.2.22 | EngineSpeed Property | 22 |
| 2.2.23 | EngineTypeDesc Property | 22 |
| 2.2.24 | ExtTemperature Property | 23 |
| 2.2.25 | Fuel Property | 23 |
| 2.2.26 | Gear Property | 24 |
| 2.2.27 | GearSettings Property..... | 25 |
| 2.2.28 | HandBrake Property..... | 25 |
| 2.2.29 | HiResDistance..... | 26 |
| 2.2.30 | IgnitionKey Property | 26 |
| 2.2.31 | IgnitionLock Property..... | 27 |
| 2.2.32 | Illumination Property..... | 27 |
| 2.2.33 | IntTemperature Property | 28 |
| 2.2.34 | Language Property | 28 |
| 2.2.35 | Lights Property | 29 |
| 2.2.36 | LightsError Property | 30 |
| 2.2.37 | Manufacturer Property..... | 30 |
| 2.2.38 | Mileage Property | 31 |
| 2.2.39 | MirrorSettings Property | 31 |
| 2.2.40 | MirrorSettingsInc | 32 |
| 2.2.41 | ModelCategory Property | 32 |
| 2.2.42 | ModelKeys Property | 33 |
| 2.2.43 | NoiseLevel Property | 33 |
| 2.2.44 | NumberOfDoors Property..... | 33 |
| 2.2.45 | NumberOfWheels Property | 34 |
| 2.2.46 | NumberOfWindows Property..... | 34 |
| 2.2.47 | Odometer Property | 34 |
| 2.2.48 | OilLevel Property | 35 |
| 2.2.49 | OilPressure Property | 35 |

| | | |
|--------|--------------------------------------|----|
| 2.2.50 | OilTemp Property | 35 |
| 2.2.51 | ProductionLocation Property | 36 |
| 2.2.52 | Protection Property | 36 |
| 2.2.53 | RainSensor Property | 37 |
| 2.2.54 | SeatAirbags Property | 37 |
| 2.2.55 | SeatAirbagsFormation Property | 38 |
| 2.2.56 | SeatBeltInfo Property | 38 |
| 2.2.57 | SeatConfigurationInfo Property | 39 |
| 2.2.58 | SeatInfoFormation Property | 39 |
| 2.2.59 | SeatOccupationInfo Property | 40 |
| 2.2.60 | SeatSettings Property | 40 |
| 2.2.61 | SeatSettingsFormation Property | 41 |
| 2.2.62 | ServiceDescription Property | 41 |
| 2.2.63 | ServiceDue Property | 42 |
| 2.2.64 | Shutters Property | 42 |
| 2.2.65 | SteeringLock Property | 43 |
| 2.2.66 | SteeringWheelSettings Property | 43 |
| 2.2.67 | SunIntensity Property | 44 |
| 2.2.68 | Sunroof Property | 44 |
| 2.2.69 | SuspensionControl Property | 45 |
| 2.2.70 | TractionControl Property | 45 |
| 2.2.71 | VehicleSounds Property | 46 |
| 2.2.72 | Warning Property | 46 |
| 2.2.73 | WashingLiquid Property | 47 |
| 2.2.74 | WheelBrake Property | 47 |
| 2.2.75 | WheelPressure Property | 48 |
| 2.2.76 | WheelSensors Property | 48 |
| 2.2.77 | WheelSpeed Property | 49 |
| 2.2.78 | Windows Property | 49 |
| 2.2.79 | WindowsControlInfo | 50 |
| 2.2.80 | WindscreenWiper Property | 50 |

Bibliography

| Number | Document |
|--------|--|
| [1] | MOST Specification Framework |
| [2] | MOST Specification |
| [3] | MOST High Protocol Specification |
| [4] | MOST NetServices "Basic Layer"; User Manual and Specification |
| [5] | MOST NetServices "Application Socket"; User Manual and Specification |
| [6] | FOT Datasheet |
| [7] | MOST Transceiver Datasheet |
| [8] | MOST FunctionCatalog |

Document Status

This document incorporates the latest agreements from the MOST/AMI-C harmonization process and is available as specification document to both MOST Cooperation and AMI-C. Conversion into a function block definition in the standardized MOST XML notation is pending.

Document History

| Date | Revision / Status | Changes |
|------------|-------------------|----------------------|
| 2002-09-03 | 1V6-00 | First public release |
| | | |

1 Abstract

1.1 Introduction

The Vehicle Device provides an interface or gateway between the MOST network and various sources of information about the car itself, usually the vehicle's comfort CAN bus. Due to the concepts and limitations of the MOST Control Message Channel, time-critical information is not available at this gateway. Information that has a direct impact on the vehicle's operational safety (e.g. ABS) shall be exported to the MOST entertainment network for user information purposes only and may never be controlled through the MOST Network.

1.2 Function Survey

In the following table, the function block's methods and properties are listed. The following OPTypes are implemented for each method / property without further notice in the table (depending on the application needs, other properties may also have the Set/SetGet OType):

- **for methods:** StartResult, Result, Error
- **for properties:** Get, Status, Error

| | Name | FktID | Description |
|---|-----------------------|-------|---|
| P | Manufacturer | 200 | Manufacturer string |
| P | ModelKeys | 201 | Internal / public model name |
| P | ModelCategory | 202 | Category of the model |
| P | ConstructionYear | 203 | Year of construction |
| P | ChassisNumber | 204 | Chassis number string |
| P | EngineDesc | 205 | Engine type and number |
| P | EngineSpeed | 206 | Current engine speed |
| P | EngineTypeDesc | 207 | Displacement, Power, No. of cylinders, etc. |
| P | IgnitionKey | 208 | State of ignition key |
| P | NumberOfWheels | 209 | Number of wheels |
| P | WheelSpeed | 20A | Wheel speed |
| P | NumberOfDoors | 20B | Number of doors, without trunk, bonnet, etc. |
| P | WindscreenWiper | 20C | Status of several windscreen wipers |
| P | NumberOfWindows | 20D | Number of windows |
| P | Lights | 20F | Status of exterior lights |
| P | Illumination | 210 | Status of interior lights |
| P | DashboardIllu | 211 | Status of dashboard illumination |
| P | Fuel | 212 | Fuel level in liters |
| P | OilTemp | 214 | Oil temperature |
| P | OilPressure | 215 | Oil pressure |
| P | CoolingWaterTemp | 216 | Cooling water temperature |
| P | HandBrake | 217 | Hand brake status |
| P | WashingLiquid | 218 | Fill level of all washing liquid tanks |
| P | Gear | 219 | Current gear and gear lever position |
| P | CarNetStatus | 21A | Status of the CAN network |
| P | Odometer | 21B | Odometer |
| P | WheelBrake | 21D | State and condition of the brakes |
| P | EngineOffTime | 400 | Time since the engine stopped running |
| P | IgnitionLock | 401 | Lock status of the ignition |
| P | SteeringLock | 402 | Lock status of the steering |
| P | DriverId | 403 | Id of driver, if available |
| P | WheelPressure | 404 | Wheel pressure |
| P | WheelSensors | 405 | Rotation sensors of the wheels + time stamp (for navigation purposes) |
| P | CruiseControl | 406 | Status and reference speed of the cruise control |
| P | ExtTemperature | 407 | Outside temperature |
| P | IntTemperature | 408 | Inside temperature |
| P | DoorOpen | 409 | Open status for each door (with trunk, bonnet, etc.) |
| P | DoorLock | 40A | Lock status for each door (with trunk, bonnet, etc.) |
| P | RainSensor | 40B | Rain intensity |
| P | Windows | 40C | Opening state of the windows |
| P | Sunroof | 40D | Opening state of sunroof, if present |
| P | SeatConfigurationInfo | 40E | Information about the seat configuration |

| | Name | FktID | Description |
|---|-----------------------|-------|---|
| P | SeatBeltInfo | 40F | Information about the safety belt |
| P | SeatOccupationInfo | 410 | Information about the seat occupation |
| P | SeatAirbags | 411 | Status of available seat airbags |
| P | SeatSettings | 412 | Seat positioning |
| P | MirrorSettings | 413 | Mirror positioning |
| P | SteeringWheelSettings | 414 | Steering wheel positioning |
| P | Distance | 415 | Distance measurements to front or rear objects |
| P | Battery | 416 | Battery voltage and load |
| P | ServiceDue | 417 | Date of next service, kilometers until next service, instant service required |
| P | ServiceDescription | 418 | String describing reason for instant service |
| P | Warning | 419 | Warning level & warning string |
| P | Protection | 41A | Options of car protection |
| P | Crash | 41B | Crash detection flag |
| P | OilLevel | 41C | Oil level |
| P | CoolingWaterPressure | 41D | Cooling water pressure |
| P | CoolingWaterLevel | 41E | Cooling water level |
| P | Cabriolet | 41F | Soft or hard top status for convertibles |
| P | GearSettings | 420 | Information about the gear mode and options for automatic transmission |
| P | Shutters | 421 | Status of window shutters |
| P | SunIntensity | 422 | Sun intensity sensor |
| P | NoiseLevel | 423 | Interior Noise Level |
| P | BrakeFluid | 424 | Brake fluid level |
| P | SuspensionControl | 425 | Adjust suspension for driving comfort |
| P | VehicleSounds | 426 | Sounds of the vehicle like horn, etc. |
| P | Language | 427 | Language of the non-MOST user interface in the car |
| P | CarOwner | 428 | Information about the car owner |
| P | LightsError | 429 | Signals malfunction of the lights |
| P | TractionControl | 42A | Enable/Disable traction control system |
| P | SeatInfoFormation | 42B | Formation of the seats for access to seat information properties |
| P | SeatAirbagsFormation | 42C | Formation of the seats for access to property SeatAirbags |
| P | SeatSettingsFormation | 42D | Formation of the seats for access to property SeatSettings |
| P | CentralLocking | 42E | Status of central locking |
| P | ProductionLocation | 42F | Location of construction |
| P | HiResDistance | 430 | High Resolution Distance Accumulator |
| P | WindowsControlInfo | 431 | Indicates which windows are remote controllable |
| P | MirrorSettingsInc | 432 | Incremental version of the MirrorSettings property |
| P | AuxiliaryFuel | 433 | Fuel level of auxiliary fuel tanks |

2 Reference

2.1 Data types

Data types used for parameters in this reference:

| | |
|-----------|---------------------------------------|
| BITFIELD: | 8 bits with individual meaning |
| BYTE: | 8 bit unsigned integer |
| WORD: | 16 bit unsigned integer |
| INTEGER: | 16 bit signed integer |
| SHORT: | 8 bit signed integer |
| STRING: | MOST compliant zero-terminated string |
| STREAM: | byte-transparent data stream |

All methods and properties described below support OPType Error with its standard arguments (ErrorCode, ErrorInfo). The FBlock-specific error values are described at the end of the reference chapter.

2.2 Functions

2.2.1 AuxiliaryFuel

Fuel level of auxiliary fuel tanks. The level of the main fuel tank is represented in the Fuel property.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | AuxiliaryFuel (0x433) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|---|
| WORD | Pos | x = tank index (the main fuel tank is not included) y = unused (0) |
| STREAM | Data | Level[x] |
| WORD | Level | Fuel level in liters |

2.2.2 Battery Property

Returns the battery voltage and load level.

Function classes: Record of {Number, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------|--------|-----------|
| Vehicle (0x05) | Battery (0x416) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|---|
| STREAM | Data | {Voltage, Load} |
| WORD | Volts | Battery voltage level in 0.1 Volts |
| WORD | Load | Battery load level in Ah or 0xFFFF if not available |

2.2.3 BrakeFluid Property

Returns information about the level of brake fluid.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | BrakeFluid (0x424) | Get | |
| | | Status | Level |

Parameters / return types

| Type | Name | Description |
|------|-------|---------------------------------------|
| BYTE | Level | 0 ... 100% (100% = recommended level) |

2.2.4 Cabriolet Property

Returns the state of the soft top or hard top (cabriolets / convertibles only). If the state of the top is intermediate and a detailed value is not available due to limitations on the car network's side, the value 50 shall be used.

Function classes: Record of {Enumeration, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------|--------|-----------|
| Vehicle (0x05) | Cabriolet (0x41F) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|----------|--|
| STREAM | Data | {Category, State} |
| BYTE | Category | Indicates the category of the cabriolet top: 0: not available 1: soft top 2: hard/vario top |
| SHORT | State | 0 = closed/mounted .. 100 = full open/unmounted, -1 error |

2.2.5 CarNetStatus Property

Contains status information about the car network (usually the "comfort CAN").

Function classes: Array of Record of {Enumeration, Switch}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | CarNetStatus (0x21A) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|--------|---|
| WORD | Pos | x = network index y = record element selector (0 = all) |
| STREAM | Data | {Type, Status}[x] |
| BYTE | Type | 0 = none, 1 = CAN, 2 = high speed CAN, etc. (tbd) |
| BITFIELD | Status | Bit0: 1 = car network is active Bit1: 1 = network error on car network Bit2: 1 = network unavailable, due to error / diagnostics Bit3..7: reserved |

2.2.6 CarOwner Property

This property returns information about the vehicle owner's name.

Function classes: Text

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | CarOwner (0x428) | Get | |
| | | Status | Name |

Parameters / return types

| Type | Name | Description |
|--------|------|-------------|
| STRING | Name | Name string |

2.2.7 CentralLocking Property

Returns the status of the central locking.

Function classes: Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------|--------|-----------|
| Vehicle (0x05) | CentralLocking (0x427) | Get | |
| | | Status | State |

Parameters / return types

| Type | Name | Description |
|------|-------|----------------------------------|
| BYTE | State | 0x00 = unlocked 0x01 = locked |

2.2.8 ChassisNumber Property

Returns the vehicle's chassis number as string.

Function classes: Text

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | ChassisNumber (0x204) | Get | |
| | | Status | Number |

Parameters / return types

| Type | Name | Description |
|--------|--------|----------------|
| STRING | Number | Chassis number |

2.2.9 ConstructionYear Property

Returns the year [and month] of construction of the vehicle as unsigned integer.

Function classes: Record of {Number, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------------|--------|----------------|
| Vehicle (0x05) | ConstructionYear (0x203) | Get | Position |
| | | Status | Position, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|---|
| STREAM | Data | {Year, Month} |
| WORD | Year | Year of vehicle's construction |
| BYTE | Month | Month of vehicle's construction or 0x00 for not available |

2.2.10 CoolingWaterLevel Property

Returns information about the level of the cooling water.

Function classes: Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|------------------------------|--------|-----------|
| Vehicle (0x05) | CoolingWaterLevel (0x41E) | Get | |
| | | Status | Level |

Parameters / return types

| Type | Name | Description |
|------|-------|---------------------------------------|
| BYTE | Level | 0 ... 100% (100% = recommended level) |

2.2.11 CoolingWaterPressure Property

Returns information about the pressure of the cooling water.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------------|--------|-----------|
| Vehicle (0x05) | CoolingWaterPressure (0x41D) | Get | |
| | | Status | Pressure |

Parameters / return types

| Type | Name | Description |
|------|----------|------------------------|
| BYTE | Pressure | Cooling water pressure |

2.2.12 CoolingWaterTemp Property

Returns information about the temperature of the cooling water.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------------|--------|-------------|
| Vehicle (0x05) | CoolingWaterTemp (0x216) | Get | |
| | | Status | Temperature |

Parameters / return types

| Type | Name | Description |
|------|-------------|-------------------------------------|
| INT | Temperature | Cooling water temperature in 0.01°C |

2.2.13 Crash Property

Indicates when the crash detector detects a crash.

Function classes: Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------|--------|---------------|
| Vehicle (0x05) | Crash (0x41B) | Get | |
| | | Status | CrashDetected |

Parameters / return types

| Type | Name | Description |
|----------|---------------|--|
| BITFIELD | CrashDetected | Bit0: 1 = crash detected Bit 1..7: reserved |

2.2.14 CruiseControl Property

Returns the status and reference speed of the cruise control.

Function classes: Record of {Switch, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | CruiseControl (0x406) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|----------|---|
| STREAM | Data | {Status, RefSpeed} |
| BITFIELD | Status | Bit0: Off/On Bit1: engaged Bit2: reference speed is valid Bit3: speed up mode active Bit4: speed down mode active Bit5-7: reserved |
| WORD | RefSpeed | Reference speed in 100*km/h |

2.2.15 DashboardIllu Property

Returns the dashboard illumination level.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | DashboardIllu (0x211) | Get | |
| | | Status | Level |

Parameters / return types

| Type | Name | Description |
|------|-------|---------------------------------------|
| BYTE | Level | 0 = off .. 100 = full brightness in % |

2.2.16 Distance Property

Returns the distance measurements to other objects at the front and rear side of the vehicle.

Function classes: Record of {Switch, Number, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | Distance (0x415) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|-------------|--|
| STREAM | Data | {Flags, FrontSensor, RearSensor} |
| BITFIELD | Flags | Bit0: Front sensor present Bit1: Front sensor active Bit2: Rear sensor present Bit3: Rear sensor active |
| WORD | FrontSensor | Distance to nearest front object in mm. (if front sensor is active) |
| WORD | RearSensor | Distance to nearest rear object in mm. (if rear sensor is active) |

2.2.17 DoorLock Property

Returns the lock status of vehicle's doors.

Function classes: Array of Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | DoorLock (0x40A) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|-------|---|
| WORD | Pos | x = kind of door (see parameter Pos of property DoorOpen) y = unused (0) |
| STREAM | Data | State[x] |
| BITFIELD | State | Bit0: 1 = present Bit1: 1 = locked Bit7: 1 = error |

2.2.18 DoorOpen Property

Returns the open status of vehicle's doors.

Function classes: Array of Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | DoorOpen (0x409) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|-------|--|
| WORD | Pos | x = kind of door: 1: bonnet 2: trunk 3: tank filler cap 4: front left 5: front right 6: rear left 7: rear right 8: any y = unused (0) |
| STREAM | Data | State[x] |
| BITFIELD | State | Bit0: 1 = present Bit1: 1 = open Bit2: 1 = ajar Bit7: 1 = error |

2.2.19 DriverId Property

Returns or set the current driver's Id. Vehicle can identify the current driver by various means, like different ignition keys, fingerprint scanners, etc. This property can be used by any MOST device to adjust preference settings to the current driver.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | DriverId (0x403) | Set | ID |
| | | Get | |
| | | Status | ID |

Parameters / return types

| Type | Name | Description |
|------|------|--|
| BYTE | ID | Id of the current driver or 0xFF if unknown. |

2.2.20 EngineDesc Property

Returns the vehicle's engine description. The value of parameter "Type" can be used to reference the right "EngineTypeDescription (see below)".

Function classes: Record of {Enumeration, Text}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | EngineDesc (0x205) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|------|--|
| STREAM | Data | {Type, Code} |
| BYTE | Type | Type of the engine: 1: Otto; 2: Diesel; 3: Electric; 4: Solar; 5: Hydro; etc. |
| STRING | Code | Engine code |

2.2.21 EngineOffTime Property

Returns the time interval in seconds since the last time the engine was running. If the resolution of this information on the car network's side is not as high, the property's value is incremented by appropriate steps (e.g. minutes → 60 seconds step). If the function is implemented but is unavailable (e.g. Clamp 30 not connected), the error message "not available" (ErrorCode = 0x41) is returned.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | EngineOffTime (0x400) | Get | |
| | | Status | Time |

Parameters / return types

| Type | Name | Description |
|-------|------|--|
| DWORD | Time | Time in seconds. The MSB indicates an error. |

2.2.22 EngineSpeed Property

Returns the current engine speed in rpm.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------|--------|-----------|
| Vehicle (0x05) | EngineSpeed (0x206) | Get | |
| | | Status | Speed |

Parameters / return types

| Type | Name | Unit | Description |
|------|-------|----------|--------------|
| WORD | Speed | 0.25 Rpm | Engine speed |

2.2.23 EngineTypeDesc Property

Contains various information about the vehicle's engine.

Function classes: Unclassified Property

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------|--------|------------------------|
| Vehicle (0x05) | EngineTypeDesc (0x207) | Get | |
| | | Status | EngineType, EngineDesc |

Parameters / return types

| Type | Name | Description |
|-------------|--------------|---|
| Enumeration | EngineType | x = 0x01 : Otto 0x02 : Diesel > 0x02 : Reserved |
| STREAM | EngineDesc | EngineType Description |
| | | 0x01 Displacement, Power, Features, MaxRPM, Cylinders, Valves, Octane |
| | | 0x02 Displacement, Power, Features, MaxRPM, Cylinders, Valves |
| WORD | Displacement | Displacement in ccm |
| WORD | Power | Nominal power in kW |
| BITFIELD | Features | Bit0: 1 = Turbo Bit1: 1 = Biturbo Bit2: 1 = Compressor Bit3..7: reserved |
| WORD | MaxRPM | Maximum rpm |
| BYTE | Cylinders | Number of cylinders |
| BYTE | Valves | Total number of valves |
| BYTE | Octane | Recommended fuel quality in octane |

2.2.24 ExtTemperature Property

Returns the outside temperature in 0.1 °C.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------|--------|-----------|
| Vehicle (0x05) | ExtTemperature (0x407) | Get | |
| | | Status | Temp |

Parameters / return types

| Type | Name | Unit | Description |
|------|------|--------|---------------------|
| INT | Temp | 0.1 °C | Outside temperature |

2.2.25 Fuel Property

Returns the fuel level and current fuel consumption. The current fuel consumption is given on a differential basis, not accumulated over a longer period of time.

Function classes: Record of {Number, Number, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------|--------|-----------|
| Vehicle (0x05) | Fuel (0x212) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------------|--|
| STREAM | Data | { Capacity, Level, Consumption, Status} |
| WORD | Capacity | Capacity of the tank in liters (0x00: not available) |
| WORD | Level | Fuel level in liters |
| WORD | Consumption | Current fuel consumption in µl |
| WORD | Status | Bit0: Consumption invalid |

2.2.26 Gear Property

Contains information about type and status of the gear.

Function classes: Record of { Enumeration, Number, Number, Number, Number, Switch }

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------|--------|-----------|
| Vehicle (0x05) | Gear (0x219) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|---------------|---|
| STREAM | Data | {Type, Count, Current, Selected, Kickdown} |
| BYTE | Type | 0 = unknown, 1 = switch gear, 2 = automatic transmission, 3 = tiptronic, 4 = Stepless |
| BYTE | ForwardCount | Number of forward gears. If the gear supports several gear sets (preselector), the set is coded in lowest 3 bits of the upper nibble. The MSB is unused. |
| BYTE | BackwardCount | Number of backward gears, coded like ForwardCount. |
| BYTE | Current | Current gear, coded like in Count parameters. The MSB indicates forward or backward drive. |
| BYTE | Selected | Depending on Type: Type = 0 or 1: Selected gear, coded like Current parameter Type = 2 or 3: 0 = N, 1..15 = gear limit, 16 = D, 17 = R, 18 = P |

2.2.27 GearSettings Property

Contains information about the gear mode and options for automatic transmission that can read and set.

Function classes: Record of { Enumeration, Enumeration, Enumeration, Enumeration }

| Fblock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | GearSettings (0x420) | Set | Pos |
| | | Get | |
| | | SetGet | Pos, Data |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|--------------|---|
| STREAM | Data | {Mode, GearShifting, Kickdown, Start} |
| BYTE | Mode | 0 = unknown / normal, 1 = economic, 2 = sportive, 3..255: reserved |
| BYTE | GearShifting | (Only available for Type 3. Type is defined in 2.2.26 above) 0 = Automatic shifting 1 = No automatic shifting 2 = Automatic shifting in lower gears, but not in higher gears |
| BITFIELD | Kickdown | (Only available for Type 2 or 3. Type is defined in 2.2.26 above) Bit0: active Bit1: limited |
| BYTE | Start | (Only available for Type 2 or 3. Type is defined in 2.2.26 above) 0 = Start with first gear |

2.2.28 HandBrake Property

Returns the state of the handbrake.

Function classes: Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------|--------|-----------|
| Vehicle (0x05) | HandBrake (0x217) | Get | |
| | | Status | BrakeOn |

Parameters / return types

| Type | Name | Description |
|----------|---------|--|
| BITFIELD | BrakeOn | Bit 0: 1 = HandBrake is on Bit 1..7: reserved |

2.2.29 HiResDistance

High Resolution Distance Accumulator. Reflects either the current value of the dashboard's trip counter or an independent counter that is counted in the Vehicle interface implementation and that can be reset by a Set command from MOST. The coding is identical to that of the Odometer property.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | HiResDistance (0x430) | Set | Count |
| | | Get | |
| | | Status | Count |

Parameters / return types

| Type | Name | Description |
|-------|-------|--------------------------------------|
| Count | DWORD | Counter value in 0.1 kilometer steps |

2.2.30 IgnitionKey Property

Returns information about whether the ignition key is plugged in and in which position.

Function classes: Record of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------|--------|-----------|
| Vehicle (0x05) | IgnitionKey (0x208) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------------|--|
| STREAM | Data | { Key, Electricity, Motor, Start } |
| BYTE | Key | 0x00 = no key present 0x01 = key present 0xFF = not available |
| BYTE | Electricity | 0x00 = electricity off 0x01 = electricity on 0xFF = not available |
| BYTE | Motor | 0x00 = motor off 0x01 = motor on 0xFF = not available |
| BYTE | Start | 0x00 = starter not active 0x01 = starter active 0xFF = not available |

2.2.31 IgnitionLock Property

Returns lock state of the ignition.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | IgnitionLock (0x401) | Get | |
| | | Status | Ignition |

Parameters / return types

| Type | Name | Description |
|----------|----------|--|
| BITFIELD | Ignition | Bit0: 1 = ignition is locked by electronic burglar protection Bit1: 1 = ignition is locked by removed ignition key Bit2..7: reserved |

2.2.32 Illumination Property

Returns information about the illumination of the vehicle's interior.

Function classes: Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | Illumination (0x210) | Get | |
| | | Status | State |

Parameters / return types

| Type | Name | Description |
|----------|-------|--|
| BITFIELD | State | Bit0: 1 = car illumination is switched on when doors are opened Bit1: 1 = car illumination is on permanently Bit2: 1 = car illumination is currently on Bit3: 1 = driver's local illumination is on Bit4: 1 = co-driver's local illumination is on Bit5: 1 = rear local illumination is on Bit6..7: reserved |

2.2.33 IntTemperature Property

Returns the inside temperatures in 0.1 °C. There can be more than 1 sensor.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------|--------|-----------|
| Vehicle (0x05) | IntTemperature (0x408) | Get | Pos |
| | | Status | Pos, Temp |

Parameters / return types

| Type | Name | Description |
|--------|------|------------------------------------|
| WORD | Pos | x = sensor index y = unused (0) |
| STREAM | Data | Temp[x] |
| INT | Temp | Inside temperature in 0.1 °C |

2.2.34 Language Property

This property returns information about the language used for in-vehicle applications.

Function classes: Text

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|--------------|
| Vehicle (0x05) | Language (0x427) | Get | |
| | | Status | LanguageCode |

Parameters / return types

| Type | Name | Description |
|--------|--------------|-------------------------------------|
| String | LanguageCode | ISO 3166 code (e.g. "DE" = Germany) |

2.2.35 Lights Property

Returns the state of the vehicle's exterior lights.

Note:

Blinking lights are regarded as 'on' as long as the related control (turn lever, warning light button) is switched to on.

Function classes: Record of {Number, Switch, Switch, Switch}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------|--------|-----------|
| Vehicle (0x05) | Lights (0x20F) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|--------------|---|
| STREAM | Data | {HeadlightPos, Headlight, Foglight, Indicators} |
| BYTE | HeadlightPos | A value in the range 0 ... 10, indicating the tilt of the headlights |
| BITFIELD | Headlight | Bit0: 1 = off Bit1: 1 = any Bit2: 1 = parking Bit3: 1 = low beam Bit4: 1 = high beam Bit5: 1 = flasher Bit6..7: reserved |
| BITFIELD | Foglight | Bit0: 1 = fog headlights on Bit1: 1 = fog rear light on Bit2..7: reserved |
| BITFIELD | Indicators | Bit0: 1 = left turn on Bit1: 1 = right turn on Bit2: 1 = reverse light on Bit3: 1 = braking lights on Bit4: 1 = roof emergency lighting on Bit5..7: reserved |

2.2.36 LightsError Property

Returns the error state of the vehicle's exterior lights.

Function classes: Record of {Switch, Switch, Switch}

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------|--------|-----------|
| Vehicle (0x05) | LightsError (0x429) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|------------|--|
| STREAM | Data | {Headlight, Foglight, Indicators} |
| BITFIELD | Headlight | Bit0: reserved Bit1: 1 = any error Bit2: 1 = parking light error Bit3: 1 = low beam light error Bit4: 1 = high beam light error Bit5: 1 = flasher light error Bit6..7: reserved |
| BITFIELD | Foglight | Bit0: 1 = fog headlights error Bit1: 1 = fog rear light error Bit2..7: reserved |
| BITFIELD | Indicators | Bit0: 1 = left turn light error Bit1: 1 = right turn light error Bit2: 1 = reverse light error Bit3: 1 = braking lights error Bit4: 1 = roof emergency lighting error Bit5..7: reserved |

2.2.37 Manufacturer Property

Returns the name of the car's manufacturer (static information).

Function classes: Text

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|--------------|
| Vehicle (0x05) | Manufacturer (0x200) | Get | |
| | | Status | Manufacturer |

Parameters / return types

| Type | Name | Description |
|--------|--------------|---|
| STRING | Manufacturer | Name of the Manufacturer (example: "Mercedes-Benz") |

2.2.38 Mileage Property

The use of the Mileage property (FktId 0x203) is deprecated. Use the Odometer property instead.

2.2.39 MirrorSettings Property

The positioning of the mirrors. All parameters are given in a range from 0 to 100, where 0 represents the first of the two mentioned end positions and 100 the second.

Function classes: Array of Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------|--------|--------------|
| Vehicle (0x05) | MirrorSettings (0x413) | Get | Pos |
| | | Set | Pos, Setting |
| | | SetGet | Pos, Setting |
| | | Status | Pos, Setting |

Parameters / return types

| Type | Name | Description |
|--------|---------|--|
| WORD | Pos | <p>x = mirror no.:</p> <ul style="list-style-type: none"> 0: retrieve/set all mirrors 1: left outboard mirror 2: right outboard mirror 3: inside mirror 4: other mirror <p>y = direction of movement:</p> <ul style="list-style-type: none"> 0: retrieve/set all movement settings 1: horizontal tilt leftmost/rightmost 2: vertical tilt uppermost/lowermost 3: other movement |
| STREAM | Data | Setting[x,y] |
| BYTE | Setting | Position of item selected by Pos. 0xFF means "not available". |

2.2.40 MirrorSettingsInc

Incremental version of the MirrorSettings property. The coding of the mirrors is the same as in property MirrorSettings. This property can be used instead of MirrorSettings in case no position sensors are available in the mirrors.

Function classes: Array of Enumeration

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------------|--------|-----------|
| Vehicle (0x05) | MirrorSettingsInc (0x432) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|------|---------|--|
| WORD | Pos | x = mirror no.: 0: retrieve/set all mirrors 1: left outboard mirror 2: right outboard mirror 3: inside mirror 4: other mirror y = unused (0) |
| BYTE | Control | 0 = no operation ¹ 1 = down 2 = up 3 = right 4 = left 5 = down right 6 = down left 7 = up right 8 = up left |

2.2.41 ModelCategory Property

Returns the category that is most suitable for the vehicle.

Function classes: Record of {Enumeration, Enumeration, Switch}

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | ModelCategory (0x202) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|----------|--|
| STREAM | Data | {Type, Style, LeftHand} |
| BYTE | Type | 0 = unknown, 1 = standard car, 2 = compact, 3 = limousine, 4 = luxus 5 = bus, 6 = van, 7 = truck, 8 = sportive/racing, 9 = off-road 10 = agricultural, 11 = construction |
| BYTE | Style | 0 = Normal, 1 = Coupe, 2 = Cabrio, 3 = Top |
| BITFIELD | LeftHand | Bit0: Left hand traffic (steering wheel on the right side) |

¹ This corresponds to the AMI-C coding plus 1. AMI-C does not need a code for "no operation".

2.2.42 ModelKeys Property

Returns the internal and public model or project name of the vehicle (static information).

Function classes: Record of {Text, Text}

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------|--------|-----------|
| Vehicle (0x05) | ModelKeys (0x201) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|----------|--|
| STREAM | Data | {Internal, Public} |
| STRING | Internal | Project or internal model name (example: "W211") |
| STRING | Public | Public name of the model (example: "E500") |

2.2.43 NoiseLevel Property

Returns the interior noise level. Explicit values ranges are specified in the application.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | NoiseLevel (0x423) | Get | |
| | | Status | Level |

Parameters / return types

| Type | Name | Description |
|------|-------|-------------|
| BYTE | Level | Noise level |

2.2.44 NumberOfDoors Property

Returns the number of doors, not including trunk and bonnet, etc.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | NumberOfDoors (0x20B) | Get | |
| | | Status | Number |

Parameters / return types

| Type | Name | Description |
|------|--------|--|
| BYTE | Number | Number of doors, not including trunk and bonnet. |

2.2.45 NumberOfWheels Property

Returns the number of wheels. This property may be non-static for vehicles which are able to lower additional wheels (e.g. trucks). Use this property to determine the index range for the Wheel property (see below).

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------|--------|-----------|
| Vehicle (0x05) | NumberOfWheels (0x209) | Get | |
| | | Status | Number |

Parameters / return types

| Type | Name | Description |
|------|--------|------------------|
| BYTE | Number | Number of wheels |

2.2.46 NumberOfWindows Property

Returns the number of adjustable windows.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------------|--------|-----------|
| Vehicle (0x05) | NumberOfWindows (0x20D) | Get | |
| | | Status | Number |

Parameters / return types

| Type | Name | Description |
|------|--------|------------------------------|
| BYTE | Number | Number of adjustable windows |

2.2.47 Odometer Property

Returns the current value of the odometer in 100m steps. Due to the extended precision, it is possible to convert from miles to km any vice versa without loss.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | Odometer (0x214) | Get | |
| | | Status | Count |

Parameters / return types

| Type | Name | Description |
|-------|-------|------------------------------|
| DWORD | Count | Odometer count in 100m steps |

2.2.48 OilLevel Property

Returns information about the oil level.

Function classes: Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | OilLevel (0x41C) | Get | |
| | | Status | Level |

Parameters / return types

| Type | Name | Description |
|------|-------|---------------------------------------|
| BYTE | Level | 0 ... 100% (100% = recommended level) |

2.2.49 OilPressure Property

Returns information about the oil pressure

Function classes: Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|------------------------|--------|-----------|
| Vehicle (0x05) | OilPressure (0x215) | Get | |
| | | Status | Pressure |

Parameters / return types

| Type | Name | Description |
|------|-------|--------------|
| BYTE | Press | Oil pressure |

2.2.50 OilTemp Property

Returns information about the oil temperature.

Function classes: Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|--------------------|--------|-------------|
| Vehicle (0x05) | OilTemp (0x214) | Get | |
| | | Status | Temperature |

Parameters / return types

| Type | Name | Description |
|------|------|---------------------------|
| INT | Temp | Oil temperature in 0.1 °C |

2.2.51 ProductionLocation Property

Returns the location of construction.

Function classes: Text

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------------|--------|-----------|
| Vehicle (0x05) | ProductionLocation (0x428) | Get | |
| | | Status | Location |

Parameters / return types

| Type | Name | Description |
|--------|----------|--------------------------|
| STRING | Location | Location of construction |

2.2.52 Protection Property

Returns options for car protection. The PIN number can be used by the vehicle for purposes like burglar protection systems. Can be read and set by MOST devices (usually the MMI). The number is transferred in string format to allow broader definitions of "PIN".

Function classes: Record of {Text, Switch}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | Protection (0x41A) | Set | Pos |
| | | Get | |
| | | SetGet | Pos, Data |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|-------------|-------------------------------|
| STREAM | Data | {PIN, AlarmSystem} |
| BITFIELD | AlarmSystem | Bit0: present Bit1: active |
| STRING | PIN | PIN number in string format |

2.2.53 RainSensor Property

Returns the state of the rain sensor.

Function classes: Record of {Switch, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | RainSensor (0x40B) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|--------|-------------------------------|
| STREAM | Data | {Status, Level} |
| BITFIELD | Status | Bit0: present Bit1: active |
| WORD | Level | Rain intensity |

2.2.54 SeatAirbags Property

Returns information about the vehicle's seat airbags.

Function classes: Array of Record of {Switch, Switch, Switch}

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------|--------|--------------|
| Vehicle (0x05) | SeatAirbags (0x411) | Get | Pos |
| | | Status | Pos, Setting |

Parameters / return types

| Type | Name | Description |
|----------|----------|--|
| WORD | Pos | x = seat no. (see Pos parameter of Property SeatConfiguration) y = record element selector (0 = all) |
| STREAM | Data | {Present, Enabled, Released}[x] |
| BITFIELD | Present | A bit set to '1' indicates that the respective airbag is present Bit0: Front airbag Bit1: Side airbag Bit2: Head airbag Bit3-7: reserved |
| BITFIELD | Enabled | A bit set to '1' indicates that the respective airbag is enabled (bit assignment see Present parameter) |
| BITFIELD | Released | A bit set to '1' indicates that the respective airbag has been released (bit assignment see Present parameter) |

2.2.55 SeatAirbagsFormation Property

Returns the formation of the seats for the property "SeatAirbags". Rows are numbered from front to rear, beginning with 1.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------------------|--------|-----------|
| Vehicle (0x05) | SeatAirbagsFormation (0x425) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|--------|---|
| WORD | Pos | x = row no. y = unused (0) |
| STREAM | Data | Nseats[x] |
| BYTE | Nseats | Number of seats in the row specified by y in Pos. |

2.2.56 SeatBeltInfo Property

Returns the status of the seat belt.

Function classes: Array of Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | SeatBeltInfo (0x40F) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|--------|--|
| WORD | Pos | x = seat no.: see property SeatConfiguration y = unused (0) |
| STREAM | Data | Status[x] |
| BITFIELD | Status | Bit 0: 0 = not fastened 1 = fastened |

2.2.57 SeatConfigurationInfo Property

Returns the seat configuration of the car. Rows are numbered from front to rear, beginning with 1. The formation of the seats (how many seats per row) can be asked by calling the function "SeatFormation".

Function classes: Array of Record of { Number, Number, Enumeration, Enumeration }

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------------------|--------|-----------|
| Vehicle (0x05) | SeatConfigurationInfo (0x40E) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------------|---|
| WORD | Pos | x = seat no.: 1 – N0: first row, leftmost – rightmost N0+1 – N1: next row, leftmost – rightmost ... y = record element selector (0 = all) |
| STREAM | Data | {Row, Index, Alignment, Orientation, Status}[x] |
| BYTE | Row | Row of the seat |
| BYTE | Index | Index of seat in its row (1 = leftmost) |
| BYTE | Alignment | 0 = centered, 1 = more on the left, 2 = more on the right |
| BYTE | Orientation | 0 = variable, 1 = forward, 2 = back, 3 = left, 4 = right |

2.2.58 SeatInfoFormation Property

Returns the formation of the seats for information properties. Rows are numbered from front to rear, beginning with 1.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------------|--------|-----------|
| Vehicle (0x05) | SeatInfoFormation (0x424) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|--------|---|
| WORD | Pos | x = row no. y = unused (0) |
| STREAM | Data | Nseats[x] |
| BYTE | Nseats | Number of seats in the row specified by y in Pos. |

2.2.59 SeatOccupationInfo Property

Returns the occupation of a seat.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------------|--------|-----------|
| Vehicle (0x05) | SeatOccupationInfo (0x410) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|--------|--|
| WORD | Pos | x = seat no.: see property SeatConfiguration y = unused (0) |
| STREAM | Data | Status[x] |
| BITFIELD | Status | Bit 0: 0 = unoccupied 1 = occupied |

2.2.60 SeatSettings Property

The positioning of the seats. All parameters are given in a range from 0 to 100, where 0 represents the first of the two mentioned end positions and 100 the second.

Function classes: Array of Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|--------------|
| Vehicle (0x05) | SeatSettings (0x412) | Get | Pos |
| | | Set | Pos, Setting |
| | | SetGet | Pos, Setting |
| | | Status | Pos, Setting |

Parameters / return types

| Type | Name | Description |
|--------|---------|---|
| WORD | Pos | x = seat no. (see Pos parameter of Property SeatConfiguration) y = 0: retrieve/set all information y = 1: slide forward/back y = 2: lift up/down y = 3: tilt forward/back y = 4: back up/down y = 5: head restraint up/down y = 6: bottom cushion soft/hard y = 7: lower back cushion soft/hard y = 8: upper back cushion soft/hard y = 9: side cushion soft/hard |
| STREAM | Data | Setting[x,y] |
| BYTE | Setting | Absolute position of item selected by Pos. 0xFF means "not available". |

2.2.61 SeatSettingsFormation Property

Returns the formation of the seats for the property "SeatSettings". Rows are numbered from front to rear, beginning with 1.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------------------|--------|-----------|
| Vehicle (0x05) | SeatSettingsFormation (0x426) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|--------|---|
| WORD | Pos | x = row no. y = unused (0) |
| STREAM | Data | Nseats[x] |
| BYTE | Nseats | Number of seats in the row specified by y in Pos. |

2.2.62 ServiceDescription Property

If a service inspection is required (Bits 2 and 3 in ServiceDue/Condition), this string property can contain an additional description of the reason.

Function classes: Text

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------------|--------|-------------|
| Vehicle (0x05) | ServiceDescription (0x418) | Get | |
| | | Status | Description |

Parameters / return types

| Type | Name | Description |
|--------|-------------|------------------------------|
| STRING | Description | Description of service alarm |

2.2.63 ServiceDue Property

Returns information about the next service.

Function classes: Record of {Switch, Number, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | ServiceDue (0x417) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|-----------|--|
| STREAM | Data | {Condition, Date, Mileage} |
| BITFIELD | Condition | Bit0: 1 = "Date" field is valid and contains the date next service is due Bit1: 1 = "Mileage" field is valid and contains the absolute mileage next service is due Bit2: 1 = A regular service inspection is due Bit3: 1 = A service inspection is necessary, malfunctions have been detected. See ServiceDescription property Bit4..7: reserved |
| DWORD | Date | First two bytes: Year of next service date Third byte: Month of next service date Fourth byte: Day of next service date |
| DWORD | Mileage | Absolute mileage next service is due |

2.2.64 Shutters Property

Contains information about the car's window shutters or dimmable windows, respectively.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|---------------------|--------|-----------|
| Vehicle (0x05) | Shutters (0x421) | Set | Pos, Data |
| | | Get | Pos |
| | | SetGet | Pos, Data |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|---------|--|
| WORD | Pos | x = shutter index y = unused (0) |
| STREAM | Data | Shutter[x] |
| SHORT | Shutter | 0..100: 0 = opaque /closed, 100 = transparent / open; -1 = error |

2.2.65 SteeringLock Property

Returns lock state of the steering wheel.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | SteeringLock (0x402) | Get | |
| | | Status | Steering |

Parameters / return types

| Type | Name | Description |
|----------|----------|--|
| BITFIELD | Steering | Bit0: 1 = steering wheel is to be locked (key removed) Bit1: 1 = steering wheel is locked (snapped in) Bit2..7: reserved |

2.2.66 SteeringWheelSettings Property

The positioning of the steering wheel. All parameters are given in a range from 0 to 100, where 0 represents the first of the two mentioned end positions and 100 the second.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------------------|--------|--------------|
| Vehicle (0x05) | SteeringWheelSettings (0x414) | Get | Pos |
| | | Set | Pos, Setting |
| | | SetGet | Pos, Setting |
| | | Status | Pos, Setting |

Parameters / return types

| Type | Name | Description |
|--------|---------|--|
| WORD | Pos | x = direction of movement: 0: retrieve/set all movement settings 1: slide backward/forward 2: tilt down/up 3: other movement y = unused (0) |
| STREAM | Data | Setting[x] |
| BYTE | Setting | Position of item selected by Pos. 0xFF means "not available". |

2.2.67 SunIntensity Property

Returns the current sun intensity. There can be more than 1 sensor.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|----------------|
| Vehicle (0x05) | SunIntensity (0x422) | Get | Pos |
| | | Status | Pos, Intensity |

Parameters / return types

| Type | Name | Description |
|--------|-----------|--|
| WORD | Pos | x = number of the sensor y = unused (0) |
| STREAM | Data | Intensity[x] |
| WORD | Intensity | Light intensity in 5 W/m ² . 0xFFFF = error |

2.2.68 Sunroof Property

Returns the state of the sunroof. If the state of the sunroof is intermediate and a detailed value is not available due to limitations on the car network's side, the value 50 shall be used.

Function classes: Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------|--------|-----------|
| Vehicle (0x05) | Sunroof (0x40D) | Get | |
| | | Status | State |

Parameters / return types

| Type | Name | Description |
|------|-------|--|
| BYTE | State | 0 = closed .. 100 = full open, 127 = tilted, 255 = error |

2.2.69 SuspensionControl Property

Returns the information about the suspension control.

Function classes: Record of {Enumeration, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|------------------------------|--------|-----------|
| Vehicle (0x05) | SuspensionControl (0x425) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|---------------------------------------|
| STREAM | Data | {OnOff, Level} |
| ENUM | OnOff | 0: Off 1: On |
| BYTE | Level | Suspension level (0: soft, 255: hard) |

2.2.70 TractionControl Property

Returns the information about the traction control.

Function classes: Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------------|--------|-----------|
| Vehicle (0x05) | TractionControl (0x424) | Get | |
| | | Status | State |

Parameters / return types

| Type | Name | Description |
|----------|-------|---|
| BITFIELD | State | Bit0: 1 = Enabled Bit1: 1 = Engaged Bit2..7: reserved |

2.2.71 VehicleSounds Property

This property indicates the generation of one or more sounds by the vehicle.

Function classes: Switch

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | VehicleSounds (0x426) | Get | |
| | | Status | State |

Parameters / return types

| Type | Name | Description |
|----------|-------|--|
| BITFIELD | State | Bit0: 1 = horn Bit1: 1 = chime Bit2: 1 = indicator tick Bit3..7: reserved |

2.2.72 Warning Property

If an event occurs that the passengers should be aware of, this property can provide a general warning level and optional classifications via an ID value and / or textual description. The warning levels should be used as follows:

- Level = 1:
An event occurs that does not require immediate action by the driver.
Example: Windshield washing liquid is empty.
- Level = 2:
An event occurs that does require immediate action by the driver, but is of temporary nature.
Example: Loss of traction at least one of the wheels.
- Level = 3:
An event occurs that does require immediate action by the driver (usually to stop the vehicle) and is of critical nature.
Example: Brake malfunctioning.

Function classes: Record of {Enumeration, Number, Text}

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------|--------|-----------|
| Vehicle (0x05) | Warning (0x419) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|--|
| STREAM | Data | {Level, ID, Text} |
| BYTE | Level | 0 = no warning, 1 = information, 2 = warning, 3 = critical |
| WORD | ID | ID of warning (proprietary) or 0xFFFF if unused |
| STRING | Text | Description of warning, empty string (0) if unused |

2.2.73 WashingLiquid Property

Returns the fill level of the vehicle's washing liquid tank. Pos x = 1 is defined to be the car's windshield tank. The assignment of all subsequent Pos values must be done on a proprietary or bilateral base. The resolution of the fill level may be coarser than 1%. Negative values occur when the level sinks below the minimum mark.

Function classes: Array of Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | WashingLiquid (0x218) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|--------------------------------------|
| WORD | Pos | x = tank index y = unused (0) |
| STREAM | Data | Level[x] |
| BYTE | Level | Fill level: 0 ... 100%, 0xFF = error |

2.2.74 WheelBrake Property

Returns the properties for wheel brake.

Function classes: Array of Record of { Enumeration, Number }

| Fblock | Fkt | OPType | Parameter |
|-------------------|--------------------|--------|-----------|
| Vehicle (0x05) | WheelBrake (0x) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|-------|--|
| WORD | Pos | x= see property WheelSpeed y = record element selector (0 = all) |
| STREAM | Data | { Status, Value }[x] |
| BITFIELD | State | Bit0: Engaged Bit1: Worn out Bit2: Enabled Bit3...7: Reserved |
| BYTE | Level | Brake level |
| WORD | Pos | X = see property WheelSpeed Y = 0 |
| | | |

2.2.75 WheelPressure Property

Returns the properties for wheel pressure.

Function classes: Array of Record of { Enumeration, Number }

| Fblock | Fkt | OPType | Parameter |
|-------------------|--------------------------|--------|-----------|
| Vehicle (0x05) | WheelPressure (0x404) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|--|
| WORD | Pos | x= see property WheelSpeed y = record element selector (0 = all) |
| STREAM | Data | { Status, Value }[x] |
| BYTE | State | 0 = to little pressure, 1 = OK, 2 = too much pressure, 255 = unavailable |
| WORD | Value | 0 if unknown, else: tire pressure in 0.01 bar |

2.2.76 WheelSensors Property

The Vehicle device contains counters for the rotations of the wheels along with a wrap-around timer with 1ms increments. The timer is started at boot time of the device that contains the Vehicle FBlock. Each time the Vehicle device receives new values for the wheel counters, the current timer value is stored with them and is given as TimeStamp parameter when the property is read. Additional the parameter TimeStamp can contain extended information for synchronization. If such a timer is already provided by the car network, it should be preferred over one that is implemented in the gateway.

Function classes: Record of { Number, Array of Number }

| FBlock | Fkt | OPType | Parameter |
|-------------------|-------------------------|--------|-----------|
| Vehicle (0x05) | WheelSensors (0x405) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-----------|--|
| STREAM | Data | { TimeStamp, Counter[y] } |
| WORD | Pos | x = record element selector (0 = all) y = see WheelSpeed property |
| WORD | Counter | Counters for the corresponding wheels Bit 0 ... 13: Contains the counter value Bit 14, 15: Contains the direction (0 0) Undefined (0 1) Forward (1 0) Backward (1 1) Error |
| WORD | TimeStamp | Timer value at last update of the wheel counters (see description) |

2.2.77 WheelSpeed Property

Returns the corresponding speed of a wheel. The valid range of the Pos argument can be determined by reading NumberOfWheels.

Function classes: Array of Number

| FBlock | Fkt | OPType | Parameter |
|-------------------|-----------------------|--------|-----------|
| Vehicle (0x05) | WheelSpeed (0x20A) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|-------|--|
| WORD | Pos | x= kind of wheel: 0 = all wheels 1 = front left 2 = front right 3 = next left 4 = next right, ... y = unused (0) |
| STREAM | Data | Speed[x] |
| WORD | Speed | Wheel speed in 0.01 km/h |

2.2.78 Windows Property

Returns the state of all windows. 0xFF is returned when Pos is set to the index of a window that is not present.

Function classes: Array of Number

| Fblock | Fkt | OPType | Parameter |
|-------------------|--------------------|--------|-----------|
| Vehicle (0x05) | Windows (0x40C) | Get | Pos |
| | | Status | Pos, Open |

Parameters / return types

| Type | Name | Description |
|--------|------|--|
| WORD | Pos | x = windowID: 1: front left 2: front right 3: next left 4: next right ... y = unused (0) |
| STREAM | Data | Open[x] |
| BYTE | Open | 0 = closed .. 100 = full open, 255 = not available |

2.2.79 WindowsControllInfo

Indicates which windows are remote controllable. If a window is "incrementally" controllable, it can only be moved up and down but no info about its absolute position is available. If it is "read/write" controllable, it is possible to write a value into the respective element of the window property in order to position the window pane.

Function classes: Array of Enumeration

| FBlock | Fkt | OPType | Parameter |
|-------------------|--------------------------------|--------|-----------|
| Vehicle (0x05) | WindowsControllInfo (0x431) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|--------|---------|---|
| WORD | Pos | x = index of the window, as in Windows property y = unused (0) |
| STREAM | Data | Control[x] |
| BYTE | Control | 0 = no info, 1 = read only, 2 = incrementally, 3 = read/write |

2.2.80 WindscreenWiper Property

Returns the state of all windscreen wiper. If a rain sensor is present, the interval speed can be calculated from the rain intensity.

Function classes: Array of Record of {Enumeration, Switch, Number}

| FBlock | Fkt | OPType | Parameter |
|-------------------|----------------------------|--------|-----------|
| Vehicle (0x05) | WindscreenWiper (0x20C) | Get | Pos |
| | | Status | Pos, Data |

Parameters / return types

| Type | Name | Description |
|----------|----------|---|
| WORD | Pos | x = panelID: 1: windscreen 2: rear windscreen 3: light windscreen ... y = record member selector (0 = all) |
| STREAM | Data | {Mode, Interval}[x] |
| BYTE | Mode | 0 = Off; 1 = Manual; 2 = Interval; 3 = Fast; 4 = High |
| BITFIELD | Washer | Bit0: on/off |
| BYTE | Interval | 0 = off .. 100 = full speed, 255 = not available (one interval speed) |

Notes:

