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**Road vehicles — Vehicle interface  
for electronic Periodic Technical  
Inspection (ePTI) —**

**Part 3:  
Data definitions**

*Véhicules routiers — Interface de véhicule pour le contrôle technique  
périodique électronique (ePTI) —*

*Partie 3: Définition des données*

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# Contents

	Page
Foreword.....	iv
Introduction.....	v
<b>1 Scope.....</b>	<b>1</b>
<b>2 Normative references.....</b>	<b>1</b>
<b>3 Terms and definitions.....</b>	<b>1</b>
<b>4 Symbols and abbreviated terms.....</b>	<b>2</b>
4.1 Symbols.....	2
4.2 Abbreviated terms.....	2
<b>5 Informative guidance for considering ePTI relevance.....</b>	<b>2</b>
<b>6 ePTI-relevant system list, DIDs and RIDs.....</b>	<b>3</b>
<b>Annex A (normative) ePTI-relevant system list.....</b>	<b>4</b>
<b>Annex B (normative) DID definitions.....</b>	<b>9</b>
<b>Annex C (normative) Routine definitions.....</b>	<b>36</b>
<b>Annex D (normative) Templates for proposed identifiers and names.....</b>	<b>42</b>
<b>Bibliography.....</b>	<b>43</b>

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## Foreword

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

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 31, *Data communication*.

A list of all parts in the ISO 20730 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Roadworthiness testing is a part of a wider regime designed to ensure that vehicles are kept in a safe and environmentally acceptable condition during their use. This regime covers periodic roadworthiness testing of vehicles and technical roadside inspections of vehicles used for commercial road transport activities and provides a vehicle registration procedure allowing for the suspension of a vehicle's authorization to be used in road traffic where the vehicle constitutes an immediate risk to road safety. Periodic testing is the main tool to ensure roadworthiness. Technical roadside inspections of commercial vehicles are merely complementary to periodic testing.

An ePTI system list, which is defined in this document, summarizes ePTI-relevant systems and specifies a defined name (system), a unique identifier (ePTI system identifier) and a description for each ePTI system. All the definitions in this document refer to this ePTI system list.

The ISO 20730 series is based on the Open Systems Interconnection (OSI) basic reference model specified in ISO/IEC 7498-1<sup>[1]</sup> and ISO/IEC 10731<sup>[3]</sup> which structures communication systems into seven layers. When mapped on this model, the application protocol and data link framework requirements specified/referenced in the ISO 20730 series are structured according to [Figure 1](#).

[Figure 1](#) illustrates a standard-based documentation concept, which consists of the following main clusters:

- vehicle diagnostic communication framework: covers all relevant basic vehicle diagnostic communication specifications of OSI layers 7, 6, and 5;
- vehicle diagnostic communication use case framework: covers the master specification, which specifies use cases and requirements of subject matter of OSI layer 7;
- presentation layer framework: covers all data relevant specifications of OSI layer 6;
- conformance test plan: covers the conformance test plan requirements of the use cases and communication requirements of OSI layers 7, 6, and 5;
- lower OSI layer framework: covers all vehicle diagnostic protocol standards of OSI layers 4, 3, 2, and 1, which are relevant and referenced by the use case specific standard.

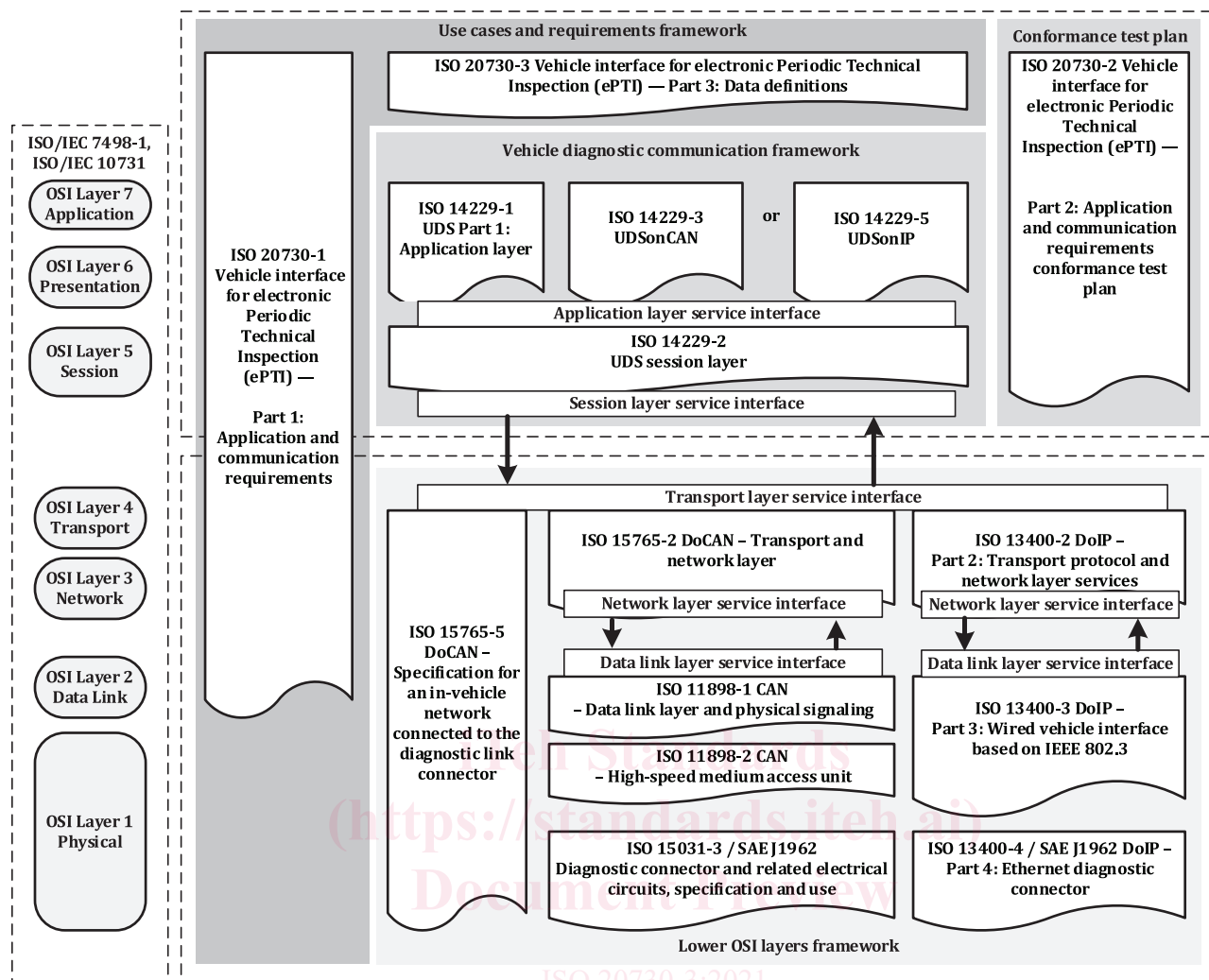


Figure 1 — ePTI document reference according to OSI model

# Road vehicles — Vehicle interface for electronic Periodic Technical Inspection (ePTI) —

## Part 3: Data definitions

### 1 Scope

This document specifies ePTI-relevant system identifiers, data identifiers, routine identifiers, input/output control identifiers, data types, CompuMethods (computations), and units.

This document describes ePTI systems' data definitions and associated technical requirements. The technical requirements of data definitions of emissions-related systems are specified in other standards, e.g. the ISO 15031 series<sup>[4]</sup>, the ISO 27145 series<sup>[5]</sup>, and SAE J1979DA.

The ePTI system list defined in this document summarizes ePTI-relevant systems and specifies a defined name (system), a unique identifier (ePTI system identifier) and a description for each ePTI-relevant system.

This document does not specify any type of test method or pass/fail criteria of the ePTI-relevant system during a PTI.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3779, *Road vehicles — Vehicle identification number (VIN) — Content and structure*

ISO 14229-1, *Road vehicles — Unified diagnostic services (UDS) — Part 1: Application layer*

ISO 20730-1, *Road vehicles — Vehicle interface for electronic Periodic Technical Inspection (ePTI) — Part 1: Application and communication requirements*

SAE J1979DA, *Digital Annex of E/E Diagnostic Test Modes*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14229-1, ISO 20730-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### 3.1

##### **error**

indicates an erroneous status

### 3.2

#### **currently not available**

information cannot be reported at time of request

### 3.3

#### **not installed**

information cannot be reported because the source is physically not available

## 4 Symbols and abbreviated terms

### 4.1 Symbols

--- empty table cell or feature undefined

### 4.2 Abbreviated terms

Cvt	convention
DID	data identifier
IOID	input output identifier
IOCT	input output control
LSB	least significant byte
M	mandatory
MI	malfunction indicator
MSB	most significant byte
O	optional
RCTP	routineControlType
RCOR	routineControlOptionRecord
RID	routine identifier
SPN	suspect parameter number
TP	tyre pressure
U	user optional

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## 5 Informative guidance for considering ePTI relevance

ePTI-relevant systems are all vehicle systems and components, that when not operating to their design criteria, affect the safety of the vehicle. These are vehicle systems that perform at least one of the following functions:

- deceleration of the vehicle;
- longitudinal, lateral and yaw stabilization of vehicle movements;
- hold the vehicle stationary;
- change of angle  $>3^\circ$  on any steered wheel, while vehicle speed is  $\geq 15$  km/h;



- e) adjustment of the intensity and/or direction of the road illumination;
- f) change of the signal image of the vehicle lighting devices, while vehicle speed is  $\geq 15$  km/h;
- g) protecting the survival space of road users;
- h) adjustment of the behaviour of the suspension and shock absorbers;
- i) monitoring and control of tyre air pressure;
- j) adjustment of the aerodynamic devices;
- k) high voltage electrical propulsion  $\geq 60$  V;
- l) changes in visibility;
- m) hazard warning and emergency related communication;
- n) generation of external warning for, e.g. pedestrian attention in regard to electric vehicle;
- o) adjustment of the vehicle height or tilt;
- p) automatically controlled acceleration.

The criteria and definition should be updated as technology progresses.

EXAMPLE The “automatic emergency brake” vehicle system can perform the “deceleration” function and is therefore an ePTI-relevant vehicle system.

## 6 ePTI-relevant system list, DIDs and RIDs

The ePTI-relevant system list shall be in accordance with [Annex A](#). The status of [Annex A](#) is normative.

The DID definitions shall be in accordance with [Annex B](#). The status of [Annex B](#) is normative.

The RID definitions shall be in accordance with [Annex C](#). The status of [Annex C](#) is normative.

The templates for identifier definitions shall be in accordance with [Annex D](#). The status of [Annex D](#) is normative.

## Annex A (normative)

### ePTI-relevant system list

The ePTI-relevant systems are identified based on the functional criteria in [Clause 5](#). [Table A.1](#) specifies ePTI-relevantSystemIdentifier, ePTI-relevant system name, symbolic name and ePTI system description. The symbolic names provide the possibility, for example, to make a unique reference to diagnostic description information in case a diagnostic service is not yet implemented using the ePTI-relevantSystemIdentifier as specified in this document. Symbolic names use the character set ISO 8859-1<sup>[2]</sup> in the range of 30<sub>16</sub> to 39<sub>16</sub> (0, 1, ... 9), 41<sub>16</sub> to 5A<sub>16</sub> (A, B, ... Z), and 5F<sub>16</sub> ( \_ ).

**Table A.1 — Definition of ePTI-relevant system identifiers and names**

ePTISys-tem-Identi-fier	ePTI-relevant system name	Symbolic name	ePTI system description
0000 <sub>16</sub>	Reserved	RESRVD	Reserved by this document for future standardization.
0001 <sub>16</sub>	Generic ePTI information	SYS_GENERIC_INFO	<p>This “virtual” (non-safety) system can be used to report standardized information as specified in this document, e.g. VIN or the mileage of the vehicle, which may not be supported by any of the other systems in this system list.</p> <p>This system is conditional. It is mandatory if standardized information, as specified in this document, is not provided by any of the other systems in this system list.</p>
0002 <sub>16</sub>	Cornering light	SYS_CORN_LI	During cornering, an extra headlamp is activated. Operates up to 40 km/h, e.g. in accordance with ECE-R 48 <sup>[21]</sup> ; ECE-R 119 <sup>[31]</sup> .
0003 <sub>16</sub>	Adaptive cruise control	SYS_ADP_CRUISE_CTRL	The system maintains the vehicle's speed, depending on the preferred speed and distance to the vehicle in front.
0004 <sub>16</sub>	Adaptive deflec-tors	SYS_ADP_DEFLECTOR	Depending on the vehicle's speed, the air deflec-tors are adjusted in order to improve driving stability.
0005 <sub>16</sub>	Airbag	SYS_AIRBAG	In case of an accident, inflatable airbags reduce the risk of injury by their absorbing effect, e.g. in accordance with ECE-R 12 <sup>[13]</sup> ; ECE-R 14 <sup>[15]</sup> ; ECE-R 16 <sup>[16]</sup> .
0006 <sub>16</sub>	Active headrest	SYS_ACT_HEADREST	The system reduces the danger of a whiplash injury in the event of a rear end collision by changing the position of the headrest towards the head.
0007 <sub>16</sub>	Active hood	SYS_ACT_HOOD	By automatically lifting the bonnet, the system ensures a larger collapsible zone in the event of an accident involving a pedestrian.
0008 <sub>16</sub>	Automatic hold function	SYS_AUTO_HOLD_FCT	The system independently holds the vehicle after stopping using the service brake and/or parking brake and automatically releases them when starting.

NOTE The mentioned UN/ECE regulations are solely stated to clarify and/or help to understand each ePTI-relevant system.

Table A.1 (continued)

ePTISys-tem-Identi-fier	ePTI-relevant system name	Symbolic name	ePTI system description
0009 <sub>16</sub>	Automatic head-lamp levelling	SYS_AUTO_HL_LEVEL	Depending on the load and (optional) pitch angle, the system regulates the headlamp's vertical aim, e.g. in accordance with ECE-R 121[32].
000A <sub>16</sub>	Automatic emergency brake	SYS_AUTO_EM_BRAKE	The system independently starts braking in order to avoid a collision with an obstacle or to reduce the consequences of an inevitable impact.
000B <sub>16</sub>	Anti-lock brake	SYS_ANTI_L_BRAKE	The system automatically prevents wheel-locking during braking by selective reduction of the wheel brake force, e.g. in accordance with ECE-R 13[14]; 71/320/EEC.
000C <sub>16</sub>	Automatic light	SYS_AUTO_LI	Depending on the ambient brightness, the system automatically switches on and off the driving light.
000D <sub>16</sub>	Electric drive	SYS_ELEC_DRIVE	Includes all propulsion systems which can propel the vehicle using electrical power, e.g. in accordance with ECE-R 100[29].
000E <sub>16</sub>	Electro mechanic power steering	SYS_ELEC_MECH_PWR-STER	The supporting power for steering is generated by an electric motor.
000F <sub>16</sub>	Electronic four-wheel steering	SYS_ELEC_4_W_STER	Two axles are steered, with a steering angle greater than 3° on all steered wheels, e.g. in accordance with ECE-R 79[22]; ECE-R 83[23]; 70/311/EEC[35].
0010 <sub>16</sub>	Electronic damping	SYS_ELEC_DAMP	Depending on the driving situation, the rebound and compression stage of the shock absorbers is adjusted by the system.
0011 <sub>16</sub>	Electronic brake system	SYS_ELEC_BRAKE	A brake pedal sensor and/or pressure sensor records the braking request and calculates the optimal brake force for each wheel, so that there is optimal activation of all wheel brakes.
0012 <sub>16</sub>	Electronic stability program	SYS_ELEC_STAB_PRG	The system stabilizes the vehicle or the complete vehicle train in critical, dynamic driving situations, e.g. in accordance with Regulation (EC) No. 661/2009[9].
0013 <sub>16</sub>	High beam assist	SYS_HIGH_BEAM_AST	The system automatically activates and deactivates the high beam according to the driving situation and lighting conditions.
0014 <sub>16</sub>	Speed limiter	SYS_SPEED_LIM	While driving, the system prevents exceeding a defined maximum speed. Relevant, if mandatory, e.g. in accordance with ECE-R 89[25]; §57c German Road Traffic Act[39]; 92/24/EEC[38].
0015 <sub>16</sub>	Belt tensioner and belt force limiter	SYS_TENS_BELT_LIM	In the event of an accident, the seat belt is tensioned to place the passengers in a setpoint position and/or limits the belt force, electrically controlled and, thus, limits the forces acting on the persons e.g. in accordance with ECE-R 16[16]; ECE-R 94[27].
0016 <sub>16</sub>	Tail light switching	SYS_TAIL_LI	Depending on operating status and/or failure of the illuminants, lighting functions are taken over by other luminaires.
0017 <sub>16</sub>	Reserved	RESRVD	Reserved by this document for future standardization.

NOTE The mentioned UN/ECE regulations are solely stated to clarify and/or help to understand each ePTI-relevant system.

Table A.1 (continued)

ePTISys-tem-Identi-fier	ePTI-relevant system name	Symbolic name	ePTI system description
0018 <sub>16</sub>	Bending light	SYS_BEND_LI	During cornering and depending on the steering angle and speed, the light beam is swivelled and/or an additional headlight is activated, e.g. in accordance with ECE-R 48 <sup>[21]</sup> ; ECE-R 98 <sup>[28]</sup> ; ECE-R 112 <sup>[30]</sup> ; ECE-R 123 <sup>[33]</sup> .
0019 <sub>16</sub>	Steering assist	SYS_STER_AST	Depending on the driving situation, the steering angle is automatically changed, without intervention by the driver. Relevant if the steering intervention occurs at a speed of more than 15 km/h, e.g. in accordance with ECE-R 79 <sup>[22]</sup> .
001A <sub>16</sub>	Height levelling	SYS_HEIGHT_LEVEL	The system changes the clearance between vehicle chassis and the road.
001B <sub>16</sub>	Emergency braking signal	SYS_EM_BRAKE_SIG	During strong deceleration, hazard warning lights and/or additional luminous surfaces are activated and/or the following traffic is warned by flashing brake lights, e.g. in accordance with ECE-R 48 <sup>[21]</sup> ; ECE-R 13 <sup>[14]</sup> .
001C <sub>16</sub>	Pre-crash system	SYS_PRE_CRASH	In a critical driving situation, the vehicle is prepared for the crash so that the risk of injury to the passengers and/or other road users is reduced.
001D <sub>16</sub>	Tyre pressure warning	SYS_TYRE_PRES_WAR	The system detects loss of tyre pressure through integrated sensors and/or by implausible values for wheel speed, e.g. in accordance with Regulation (EC) No. 661/2009 <sup>[9]</sup> .
001E <sub>16</sub>	Traction control	SYS_TRACT_CTRL	The system prevents the drive wheels spinning during acceleration by applying brake force.
001F <sub>16</sub>	Superimposed steering	SYS_SU_IMP_STER	Depending on the driving situation, the system varies the transmission ratio of the steering.
0020 <sub>16</sub>	Roll over protection (active)	SYS_ACT_R_O_PROTECT	In the event of an imminent rollover, support elements are extended to secure the survival space, e.g. in accordance with 74/60/EEC <sup>[37]</sup> .
0021 <sub>16</sub>	Hydrogen installation	SYS_HYD_INST	The hydrogen is stored in the vehicle and is used to propel the vehicle, either by combustion in an internal combustion engine or by conversion in a fuel cell with an additional electric engine.
0022 <sub>16</sub>	Start-up aid	SYS_START_UP_AID	Aids start-up, e.g. by raising the lift axle or by momentarily applying brake pressure or by automatic release of the parking brake.
0023 <sub>16</sub>	Trailer stabilization	SYS_TRAILER_STAB	Through selective braking of the trailer by the service brakes, the complete vehicle train is stabilized.
0024 <sub>16</sub>	Endurance brake	SYS_END_BRAKE	Is an additional braking system that can maintain braking over a period of time without a significant reduction in performance, e.g. in accordance with ECE-R 13 <sup>[14]</sup> ; 71/320/EEC <sup>[36]</sup> ; 92/24/EEC <sup>[38]</sup> .
0025 <sub>16</sub>	Differential lock deactivation	SYS_DIF_LOCK_DACT	If this system is activated, the differential locks are unlocked depending on parameters (e.g. wheel slip, steering angle, speed).
NOTE The mentioned UN/ECE regulations are solely stated to clarify and/or help to understand each ePTI-relevant system.			

Table A.1 (continued)

ePTISys-tem-Identi-fier	ePTI-relevant system name	Symbolic name	ePTI system description
0026 <sub>16</sub>	Electronically controlled leading and trailing axle	SYS_ELEC_CTRL_LT_AX	The steered axles are additional axles with electronically controlled steering. The steering force is generated by a hydraulic pump or by the lateral force on the wheels.
0027 <sub>16</sub>	Electronic steering damper	SYS_ELEC_STER_DAMP	Steering damping is controlled electronically.
0028 <sub>16</sub>	Bus stop brake	SYS_BUS_STOP_BRAKE	The system ensures the application of brake pressure when stationary, independent of the brake pedal activation. Buses can only start moving when the doors are closed.
0029 <sub>16</sub>	Kneeling	SYS_KNEELING	The system allows a road vehicle to be lowered to make it easier for passengers to board and disembark.
002A <sub>16</sub>	Steering brake	SYS_STER_BRAKE	During cornering, dosed braking is applied to one or more wheels.
002B <sub>16</sub>	Tyre pressure control	SYS_TYRE_PRE_CTRL	According to the requirement of the driver, the system regulates the tyre pressure.
002C <sub>16</sub>	Sliding joint stabilization	SYS_SLID_J_STAB	The articulated joint is stabilized by damping, dependent on vehicle speed, cylinder pressure of the articulated dampers, steering and articulation-angle.
002D <sub>16</sub>	Reserved	RESRVD	Reserved by this document for future standardization.
002E <sub>16</sub>	Four-wheel parking brake	SYS_4_W_PARK_BRAKE	The system applies the maximum brake pressure in the wheel cylinders at all four wheels.
002F <sub>16</sub>	Front-wheel locking device	SYS_FRONT_W_LOCK	Front wheel suspension, which permits lateral inclination of the motorbike, can be locked and unlocked by an electric actuator. Above a certain speed, it is automatically unlocked.
0030 <sub>16</sub>	Adaptive headlights	SYS_ADAP_HEAD_LI	The illumination of the surrounding road area and/or the direct illumination of road users in the danger area in front of the vehicle is optimized by dynamic adaption of the light beams.
0031 <sub>16</sub>	Electrically-actuated parking brake	SYS_ELEC_PARK_BRAKE	The parking brake function is triggered or transmitted electronically or electromechanically.
0032 <sub>16</sub>	Lane change assist	SYS_LANE_CH_AST	At a lane change, the system warns the driver about vehicles in the next lane and steers the vehicle back.
0033 <sub>16</sub>	Lane keep assist	SYS_LANE_KEEP_AST	The system warns the driver when the vehicle is unintentionally leaving its lane and steers the vehicle back.
0034 <sub>16</sub>	Automatic eCall	SYS_AUTO_ECALL	The system is triggered automatically by in-vehicle sensors or manually, it transmits a minimum set of data (EN 15722) via mobile communication network and establishes an audio connection based on the (emergency) number between the vehicle passengers and the public safety answering point, see Regulation (EU) 2015/758 <sup>[10]</sup> .

NOTE The mentioned UN/ECE regulations are solely stated to clarify and/or help to understand each ePTI-relevant system.

Table A.1 (continued)

ePTISys-tem-Identi-fier	ePTI-relevant system name	Symbolic name	ePTI system description
0035 <sub>16</sub>	Active roll stabilization	SYS_ACT_ROLL_STAB	Via appropriate actuators the system produces a roll moment which encounters the vehicle roll movement depending on the current driving situation.
0036 <sub>16</sub>	Camera monitor	SYS_CAM_MONITOR	The system which generates at least a part of the indirect field of vision by a camera monitor combination (e.g. in accordance with ECE-R 46[20]).
0037 <sub>16</sub>	Acoustic vehicle alerting	SYS_ACO_VE_ALERTING	At low speed, the system generates an external, specific sound in order to warn, e.g. pedestrians.
0038 <sub>16</sub>	Basic exterior lights	SYS_EXTER_LI	The system switches on/switches off the basic lighting devices (e.g. indicators).
0039 <sub>16</sub>	Automated lane keeping system (ALKS)	SYS_AUTO_LANE_KEEP	A system which is activated by the driver and which keeps the vehicle within its lane by controlling the lateral and longitudinal movements of the vehicle for extended periods without the need for further driver input.
003A <sub>16</sub>	Turning assistant	SYS_TURN_ASSIST	A system to inform the driver of a possible collision with a traffic participant (e.g. bicycle) near side (e.g. in accordance with ECE-R 151[34]).
003B <sub>16</sub>	Tachograph	SYS_TACHOGRAPH	A system to record the driving time, breaks, rest periods as well as periods of other work undertaken by a driver, for example, required by Regulation (EU) No 165/2014[8].
003C <sub>16</sub> to EFFF <sub>16</sub>	Reserved	RESRVD	Reserved by this document for future standardization.
F000 <sub>16</sub> to FFFE <sub>16</sub>	Reserved for vehicle manufacturer use	RESRVD_VM	Reserved for vehicle manufacturer use.
FFFF <sub>16</sub>	Reserved	RESRVD	Reserved by this document, not available for ePTI system identifier assignment.

NOTE The mentioned UN/ECE regulations are solely stated to clarify and/or help to understand each ePTI-relevant system.