SLOVENSKI STANDARD
SIST-TS CEN/TS 17249-4:2019

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Inteligentni transportni sistemi - e-Varnost - 4. del: e-Klic za kmetijska/gozdarska vozila UN/ECE kategorij T, R, S

Intelligent transport systems - eSafety - Part 4: eCall for UNECE Category T, R, S agricultural/forestry vehicles

Intelligente Verkehrssyteme - eSicherheit - Teil 4: eCall für UNECE-Kategorie T, R und S Landmaschienen und Forstfahrzeuge

Systèmes de transport intelligents - eSafety - eCall pour les véhicules agricoles / forestiers de la catégorie T, R, S de la CEE-ONU

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (CEN/TS 17249-4:2019) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

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Introduction

As a result of European Regulation, from 2018, all new model Category M1/N1 vehicles will be equipped with112-eCall. Other model Category M1/N1 vehicles may be voluntarily equipped with 112-eCall.

The current eCall Regulation covers only M1 and N1 Category vehicles (cars and vans). The European Commission's "ICT Rolling Plan (2017) states the objective "Action 1 Develop technical specification/standards for the implementation of eCall in vehicles of categories other than M1 and N1 and for other user types, taking into account requirements included within type approval regulation as well as ongoing activities in this area (pilots, CEF,…)." And goes on to explain "……..for the extension to other vehicles types and services, such as Heavy Duty Vehicles, Power Two Wheelers or Hazardous Goods tracking, and other classes of vulnerable road users".

The CEN Project TC 278 PT1507 has addressed the issues relating to eCall for HGVs, coaches and busses, Powered two wheel vehicles and agricultural/forestry vehicles. See CEN/TR 17249-1:2018 for context (especially Section 12 in respect of agricultural/forestry vehicles).

The UNECE category T defines an agricultural/forestry vehicle as "a power-driven vehicle, either wheeled or track laying, which has at least two-axles, whose function depends essentially on its tractive power, and which is specially designed to pull, push, carry or actuate certain implements, machines or trailers intended for use in agriculture or forestry. Such a vehicle may be arranged to carry a load (E.g.: Forwarder) and attendants."

When on the road, accidents involving agricultural/forestry vehicles can cause serious problems, largely because of what they are towing (muck spreaders, equipment with metal spikes, large round bales, livestock, etc.) and while it may be impractical to know the cargo, it is important to know that it is an agricultural/forestry vehicle and that such related problems may arise.

However, in the case of agricultural/forestry vehicles of most types, the benefit of eCall off the roadway is of even greater value. The agricultural/forestry vehicle driver is normally working alone, with no passing traffic or onlookers, frequently in a remote location. If there is a serious incident and the agricultural/forestry vehicle driver is injured, this is often not noticed for some considerable time. It is already well recognized that eCall is of greatest benefit to speed assistance to those who have incidents in remote locations. (That said, it is recognized that eCall, as currently supported, will only work where there is cellular network coverage, however, CEN/TS 17312 is addressing this issue to additionally provide eCall support via satellite communications for those who elect to add this capability, and TS 17184 provides the means to support eCall via IMS (4G/LTE) communications where this capability is supported by the nearest PSAP and the vehicle is suitably equipped).

This Technical Specification provides determination for the provision of 112-eCall to agricultural/forestry vehicles. As with the existing provisions for eCall for Category M1/N1 vehicles, these systems are specified within the paradigm of being OEM fit equipment supplied with new vehicles.

The provision of eCall for the aftermarket will be the subject of other work, and in respect of the operational requirements for any such aftermarket solutions for agricultural and forestry vehicles will use the specifications of this Technical Specification as a principle reference point.

This document is complementary to EN 16072 and EN 15722 and presents adaptation requirements for the provision of eCall for Agricultural and Forestry vehicles.

1 Scope

In respect of 112-eCall (operating requirements defined in EN 16072), this document defines additional specifications for the provision of eCall for agricultural/forestry vehicles.

As with the existing provisions for eCall for Category M1/N1 vehicles, these systems are specified within the paradigm of being OEM fit equipment supplied with new vehicles.

NOTE 1 The provision of eCall for vehicles via the aftermarket (post sale and registration) will be the subject of other work, and in respect of the operational requirements for any such aftermarket solutions for agricultural/forestry vehicles, will use the specifications of this Technical Specification as a principle reference point.

NOTE 2 The 112-eCall paradigm involves a direct call from the vehicle to the most appropriate PSAP. (Third party service provision by comparison, involves the support of an intermediary third party service provider before the call is forwarded to the PSAP). The specifications herein relate only to the provision of 112-eCall or IMS-112-eCall, and do not provide specifications for third party service provision of eCall.

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.

EN 15722:2015, *Intelligent transport systems — eSafety — eCall minimum set of data*

EN 16072:2015, *Intelligent transport systems — eSafety — Pan-European eCall operating requirements*

CEN/TS 17184, *Intelligent transport systems — eSafety — eCall high level application requirements (HLAP) using IMS packet switched networks*

CEN/TS 17240, *Intelligent transport systems — eSafety — eCall end to end conformance testing for IMS packet switched based systems*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1
112
single European emergency call number supporting Teleservice 12

[SOURCE: ETSI/TS 122 003]

3.2
112-eCall
eCall via single 112 European emergency call number supporting Teleservice 12

NOTE 1 to entry: In accordance with EN 16072 and EN 16062

3.3
agricultural/forestry vehicle
UNECE vehicle of category T, R, S

[SOURCE: UNECE ECE/TRANS/WP.29/78/Rev.4]

3.4
automated vehicle
cooperative and connected vehicles that operate without a person directly in control

3.5
device
term used by ISOBUS for an implement or a machine (3.11)

3.6
equipment
device or machine that performs a specific field operation

[SOURCE: ISO 11783-1]

3.7
field
area of land managed by a farmer, represented by either a single partfield or a collection of more than one partfield

[SOURCE: ISO 11783-1]

3.8
implement
device or machine that performs a specific operation and which is normally attached to a tractor (3.16)

[SOURCE: ISO 11783-1]

3.9
in-vehicle system
IVS
equipment within the vehicle that manages and effects the eCall transaction

3.10
ISOBUS
universal protocol for electronic communication between implements (3.8), tractors and computers

3.11
machine
device that uses or applies mechanical power, which has a definite function and which performs a specific kind or kinds of work

[SOURCE: ISO 11783-1]

3.12
minimum set of data
MSD
data content of an eCall message to the PSAP containing information about the location of the incident, providing detail characterising the vehicle, and sometimes also providing 'optional additional data' that is deemed relevant

Note 1 to entry: As specified in EN 15722.

3.13
partfield
area characterized by the cultivation of only one agricultural crop

[SOURCE: ISO 11783-1]

3.14
Optional Additional Data
OAD
part of the 'Minimum Set of Data' allocated for additional optional data

Note 1 to entry: Data provided in a format determined in EN 15722

3.15
Public Safety Answering Point
PSAP
'first level' responder to whom an emergency call/eCall is directed

3.16
tractor
machine that is the primary source of power in a connected system [SOURCE: ISO 11783-1]

4 Symbols and abbreviations

CEF	Connecting Europe Facility transport (European Commission)
EC	European Commission
EN	European Standard
HLAP	High Level Application Protocols
IMS	IP-Multimedia Subsystem
ISO	International Standards Organization
ISOBUS	see ISOBUS definition (3.10)
IVS	in-vehicle system (3.9)
MSD	minimum set of data (EN 15722)
OAD	Optional Additional Data (concept)
OEM	original equipment manufacturer
PSAP	Public Safety Answering Point (3.15)
TPS	Third Party Service
TS	Technical Specification
UNECE	United Nations Economic Commission for Europe

5 Conformance

For the purposes of the present specification, the vehicle categories T, R, S as defined in UNECE and as specified in EN 15722 shall apply.

Conformance to the requirements of this Standards Deliverable for eCall using circuit switched wireless cellular communications systems are to be found in EN 16062 and EN 16454.

Conformance to the requirements of this Standards Deliverable for eCall using packet switched IMS are to be found in CEN/TS 17184 and CEN/TS 17240.

This European Standards Deliverable makes no conformance specifications or requirements in respect of TPS eCall operating requirements, and conformance requirements in respect of TPS eCall can be found in EN 16102 and EN 16454.

6 General overview of the eCall session for 112-eCall for agricultural and forestry vehicles

6.1 Context of Agricultural/forestry vehicle accidents

See CEN/TR 17249-1:2018 Clause 12 for greater detail concerning typical agricultural and forestry vehicle accidents.

Accidents related to agricultural and forestry vehicles can be related to the working accidents which happen e.g. in the field or traffic accidents which happen in the public roads.

Upon a serious accident or collision, the IVS shall trigger the 112-eCall automatically, in accordance with EN 16072, and the relevant wireless cellular communication standard for eCall, in the case of an eCall equipped agricultural/forestry vehicle (3.3), also providing a relevant set of “Optional Additional Data” as part of the minimum set of data in accordance with EN 15722 and as defined in this specification.

An eCall can also be generated manually in accordance with EN 16072 and the specifications defined herein.

In the case of agricultural/forestry vehicles (3.3), there are the following specific use cases in addition to data requirements defined in EN 15722:

- Rollover detection: Upon accident, the *IVS* shall detect and report the rollover, and optionally may detect the type of rollover (side roll-over or rear roll-over)

- Vehicle operator information: Upon accident, the *PSAP* operator shall be informed if the person operating the vehicle was present in the cabin.

NOTE An accident can happen when the *agricultural/forestry vehicle* is operating but the operator is not present in the cabin. Also, an *agricultural/forestry vehicle* can be in a self-driving mode.

- *Implement* list: The *PSAP* operator can be made aware about the context of type of the work performed by *agricultural/forestry vehicle* (if known).

See CEN/TR 17249-1:2018, Clause 12 for detail.

6.2 Agricultural and Forestry vehicle categories defined by UNECE

See CEN/TR 17249-1:2018, Clause 12 for detail. In summary:

UNECE classifies agricultural/forestry vehicles as Category T, R and S:

- 'Category T' means any motorised, wheeled or tracked agricultural or forestry vehicle having at least two axles and a maximum design speed of not less than 6 km/h

- 'Category R - Agricultural trailer' means any agricultural or forestry vehicle intended mainly to be towed by a tractor and intended mainly to carry loads or to process materials

- 'Category S - Interchangeable towed equipment': any vehicle used in agriculture or forestry which is designed to be towed by a tractor, changes or adds to its functions, permanently incorporates an implement or is designed to process materials

NOTE Quadricycles used frequently in agriculture are Categorized under category L6e and L7e. eCall for category L6e and L7e are covered by CEN/TS 17249-6.

6.3 Device (implement or machine) classes defined by ISOBUS

The following device classes are defined by ISOBUS dictionary referred to in ISO 11783-10, which may act as agricultural/forestry vehicle implements (3.8). An agricultural/forestry vehicle may perform different operations and have different kinds of implement connected. In order to give a context of type of work performed by the agricultural/forestry vehicle to the PSAP operator, if this information is known and made available to the vehicle eCall IVS (3.9), the IVS may report information about types of connected devices as part of its 'Optional Additional Data' (3.14).

The means by which such data are made available to the IVS is a feature of in-vehicle system design and outside the scope of this specification.

– 0 – Non-specific system

– 1 – Tractor

– 2 – Primary soil tillage

– 3 – Secondary soil tillage

– 4 – Planters /seeders

– 5 – Fertilizer

– 6 – Sprayers

– 7 – Harvesters

– 8 – Root harvester

– 9 – Forage harvester

– 10 – Irrigation

– 11 – Transport / trailers

– 12 – Farmyard work

– 13 – Powered auxiliary units

– 14 – Special crops

– 15 – Municipal work

– 17 – Sensor system

– 18 – Reserved for future assignment

– 19 – Timber harvesters

– 20 – Forwarders

– 21 – Timber loaders

– 22 – Timber processing machines

– 23 – Mulchers

– 24 – Utility vehicles

– 25 – Slurry applicators

– 26 – Feeder / mixer

7 General requirements

7.1 Automatic / manual eCall triggering

An eCall may be automatically or manually triggered as specified in EN 16072.

If an agricultural/forestry vehicle is equipped for eCall, the system shall include rollover detection as defined herein.

7.2 Triggering conditions

The conditions for triggering of eCall, as described in EN 16072:2015, Clause 7.10, shall also apply to eCall for agricultural/forestry vehicle UNECE Category T).

UNECE Category R and S trailers may, if appropriate, be fitted with a manual eCall device, or be connected to the Category T towing vehicle eCall device using the CANBUS or similar means.

NOTE Category R and S trailers can house machinery powered by the PTO connection of the attached Category T towing vehicle or be powered for other means, such as wood shredding, timber sawing and other timber processing, baling, cutting, harvesting etc. which carry risks to the driver/operator and are a cause of injury and death, often in a remote location. A manual eCall triggering device such as a strategically located button or some sensor activated automatic trigger can therefore be provided for Category R and S trailers.

Instigation of triggering and the technical means of triggering, in this OEM provided paradigm, shall be determined by the designer of the system, however such provisions shall trigger an eCall in the event of:

– Significant collision

– Rollover

– Fire

– Other conditions considered appropriate by the system designer

– Manual instigation

“Significant collision” in this paradigm are the conditions that the system designer determines should generate an eCall.