EN 50436
Alcohol Interlock Standards
Evolutions and future vision

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What to expect

How can interlock programmes, their stakeholders and participants and professional preventive users be supported best?

Three topics under one umbrella

- Standardization: EN50436 and what that is.
- The relationship to regulatory aspects in the EU
- Future developments

01

Some background on EN 50436 and new EU legislation

Why Interlock Standardization?

EN 50436 series specifies test methods and essential performance requirements for alcohol interlocks (and vehicles) and gives guidance for decision makers, purchasers and users.

- EN 50436 series started by specifying test methods and essential performance requirements for alcohol interlocks
  objective: proven quality and performance of the devices

- with increasing complexity of vehicles the installation (esp. retrofit) became an issue; widening of the scope to also cover the connection to vehicles
  objective: safe and (cost) efficient usage of alcohol interlocks

REGULATION (EU) 2019/2144 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 November 2019 on type approval requirements for motor vehicles

Article 6

Advanced vehicle systems for all motor vehicle categories

1. Motor vehicles shall be equipped with the following advanced vehicle systems:

(a) intelligent speed assistance;

(b) alcohol interlock installation facilitation;

(c) driver drowsiness and attention warning;

(d) advanced driver distraction warning;

‘alcohol interlock installation facilitation’ means a standardised interface that facilitates the fitting of aftermarket alcohol interlock devices in motor vehicles;

EN 50436 is cited / asked for in the Annex!

02

EN 50436 – a series of standards in six parts

EN 50436-1

Instruments for drink-driving-offender programs

EN 50436-2

Instruments having a mouthpiece and measuring breath alcohol for general preventive use

EN 50436-3

Guidance for authorities, decision makers, purchasers and users

EN 50436-6

Data security

EN 50436-4

Connection and digital interface between the alcohol interlock and the vehicle

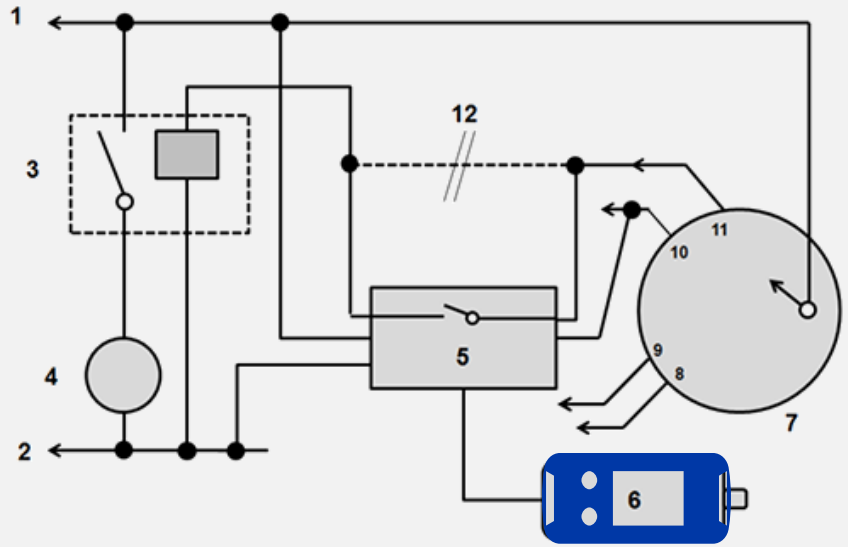
EN 50436-7

Installation Document

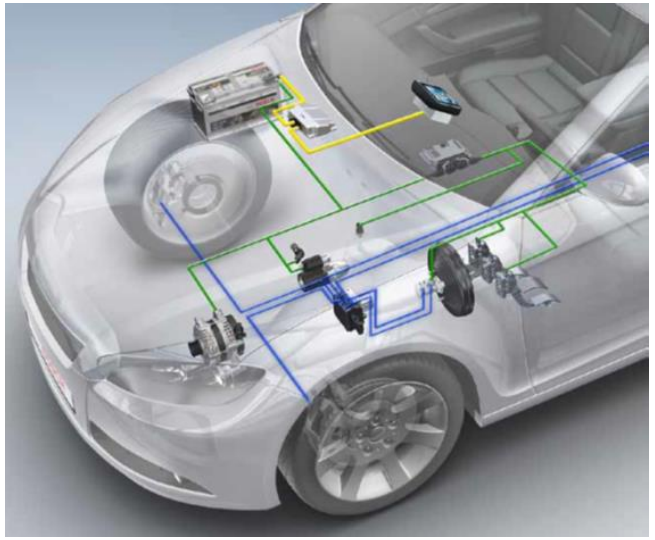
03

Challenge to the application of alcohol interlocks

New Task



classical installation scheme
(cutting wires!)



modern integrated vehicle

To keep **alcohol interlocks widely deployable for everyone**

a **smart methodology** was required to transform the classical installation patterns into those for modern highly integrated vehicles

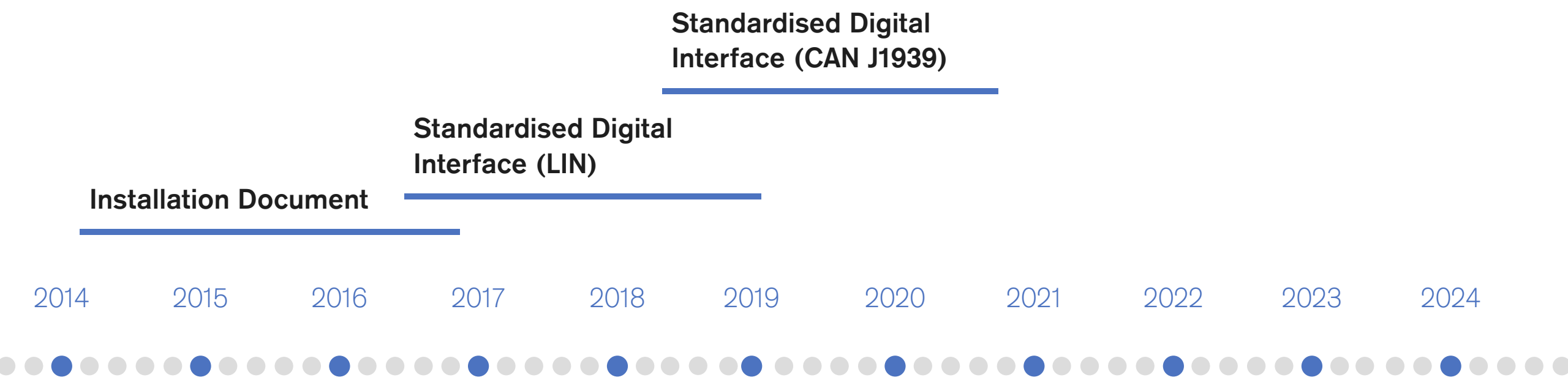
Answer is a Multi Step Strategy

– supports the installation in moderately and highly complex vehicles

– keeps the support up (does wait for some future wonder solution)

– decouples installation advice and technical processes

– is aware of technical need and aims at completeness



04

EN 50436-7 and EN 50436-4

EN 50436-1

Instruments for drink-driving-offender programs

EN 50436-2

Instruments having a mouthpiece and measuring breath alcohol for general preventive use

EN 50436-3

Guidance for authorities, decision makers, purchasers and users

EN 50436-6

Data security

EN 50436-4

Connection and digital interface between the alcohol interlock and the vehicle

EN 50436-7

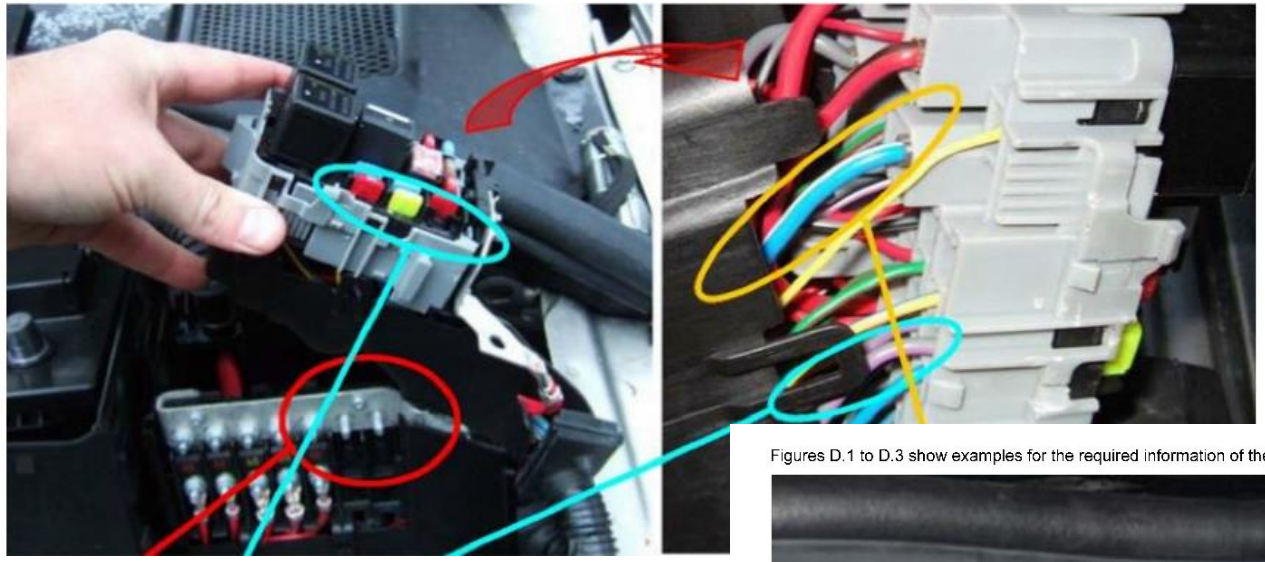
Installation Document

Specifies test methods and performance requirements for breath alcohol controlled alcohol interlocks

- EN 50436-7 defines the content and layout of a document, that is needed to properly install an alcohol interlock into a vehicle.
- technical requirements reflect requirements given in other parts of EN 50436 series of standards or standards refenced there.
- the numbers mandated in Annex C reflect the minimum requirements for alcohol interlocks after EN 50436-1.
- in order to fulfil EN 50436-7 the documentation as such need to comply and the necessary functionality needs to be available.

EN 50436-7:2016
Installation document

In support of the new type approval EN 50436-7 aims at vehicle manufacturers.



Function	*Cable or pin*	*Position of connection*
Battery feed (terminal +30), uninterrupted [a] For nominal 12 V or nominal 24 V the alcohol interlock requires and accepts 9 V-36 V when the vehicle is off or in stand-by. The interlock in its standby mode does not require a current of more than 5 mA. For short period of time, the current may be higher up to 1 A with transient bursts up to 3 A. For nominal 12 V or nominal 24 V the alcohol interlock requires and accepts 9 V-36 V when the vehicle is in use. The alcohol interlock does not require a current of more than 7 A, when the vehicle is in use.	Red cable Pin 5 2,5 mm²	Connector X2 in central fuse box in engine compartment
Ground (terminal −30)	Screw terminal at driver's door at A-pillar 2,5 mm²	The rear one of three terminals
Start enabler [b] 0 V to 36 V on the cable to be interrupted. Shall prohibit vehicle from starting / moving if circuit is open.	Blue-white cable Pin 6 2,5 mm²	Connector C5 in central electronic module
Input / Output Shall prohibit vehicle from starting / moving after signal from alcohol interlock, is GROUND or HIGH or shall allow vehicle to start / move after signal from alcohol interlock, is HIGH or GROUND.	Blue-white cable Pin 6 2,5 mm² Signal HIGH: start / move prohibited	Connector C5 in central electronic module
Data bus connection [c] Connection to an internal data bus of the vehicle for information exchange between the vehicle and the alcohol interlock. Details of the data bus connection shall be given in the assembly instructions (see 6.7)	LIN GROUND: Green cable Pin 5 2,5 mm² LIN HIGH: Yellow cable Pin 6 2,5 mm² *or alternatively* Connector according to prEN 50436-4 (Accessory part number 123456)	Connector C6 in central electronic module *or alternatively* Connector behind glove compartment

Figures D.1 to D.3 show examples for the required information of the assembly instruction.

Figure D.1 — Location of ground installation point

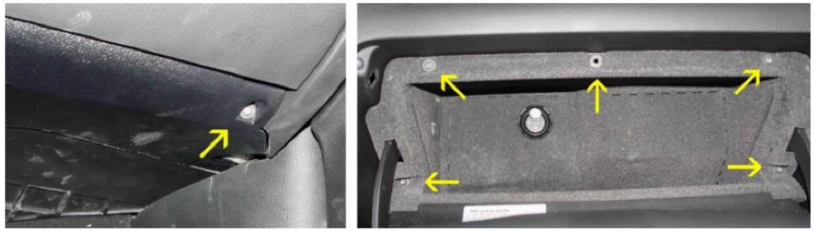


Figure D.2 — Taking apart to reach an installation point by minimizing damages

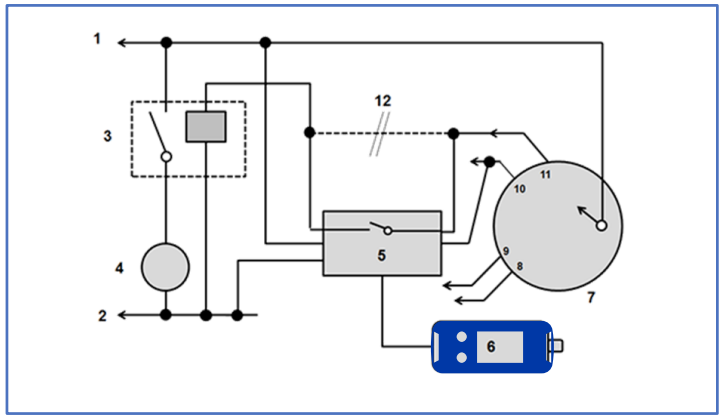
EN 50436-7:2016

Installation document

Standardized information

- idea follows safety card
- important first step
- directs at future technologies

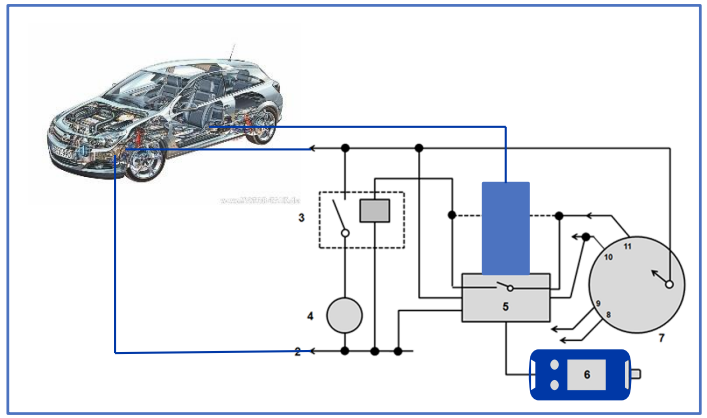
The three options in EN 50436-7 that support alcohol interlock installations



Classical Installation

Table C.1 3a - Start enabler

0 V to 36 V on the cable to be interrupted. Shall prohibit vehicle from starting / moving if circuit is open.



Pseudo–digital installation

Table C.1 3b - Input / Output

Shall prohibit vehicle from starting / moving after signal from alcohol interlock, is GROUND or HIGH

or

shall allow vehicle to start / move after signal from alcohol interlock, is HIGH or GROUND.

Digital installation

Table C.1 3c - Data bus connection

Connection to an internal data bus of the vehicle for information exchange between the vehicle and the alcohol interlock.
Details of the data bus connection shall be given in the assembly instructions.

EN 50436-1

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Connection and digital interface between the alcohol interlock and the vehicle

EN 50436-7

Installation Document

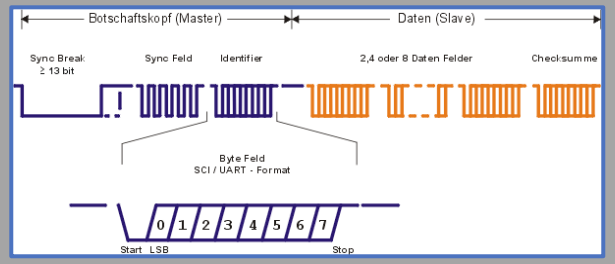
Offers a shared interface between alcohol interlock and vehicle

- no longer cutting of wires
- uses proven automotive IT concepts
- reflects today's vehicle architectures

LOCAL INTERCONNECT NETWORK

		Status Payload							
Frame identifier	Data 1	Data 2	Data 3	Data 4	Data 5	Data 6	Data 7	Data 8	
default 3A	Status	payload byte 1	payload byte 2	payload byte 3	payload byte 4	payload byte 5	payload byte 6	payload byte 7	Check sum

CAN SAE J1939 *



*fully described in the proposal draft for 2021

EN 50436-4:2019

Connection and digital interface between the alcohol interlock and the vehicle

EN 50436-4 allows for an easy and safe installation of alcohol interlocks into highly integrated vehicles of all types

05

What are the next steps?

Past and next steps

already decided and worked on in BTTF 116-2

– include additional physical layer, mainly for commercial vehicles
– include technical progress (electric vehicles .....)

Installation Document

Standardised Digital Interface (LIN)

Standardised Digital Interface (CAN J1939)

Standardised Digital Interface (CAN)

3rd edition of parts 1 and 2

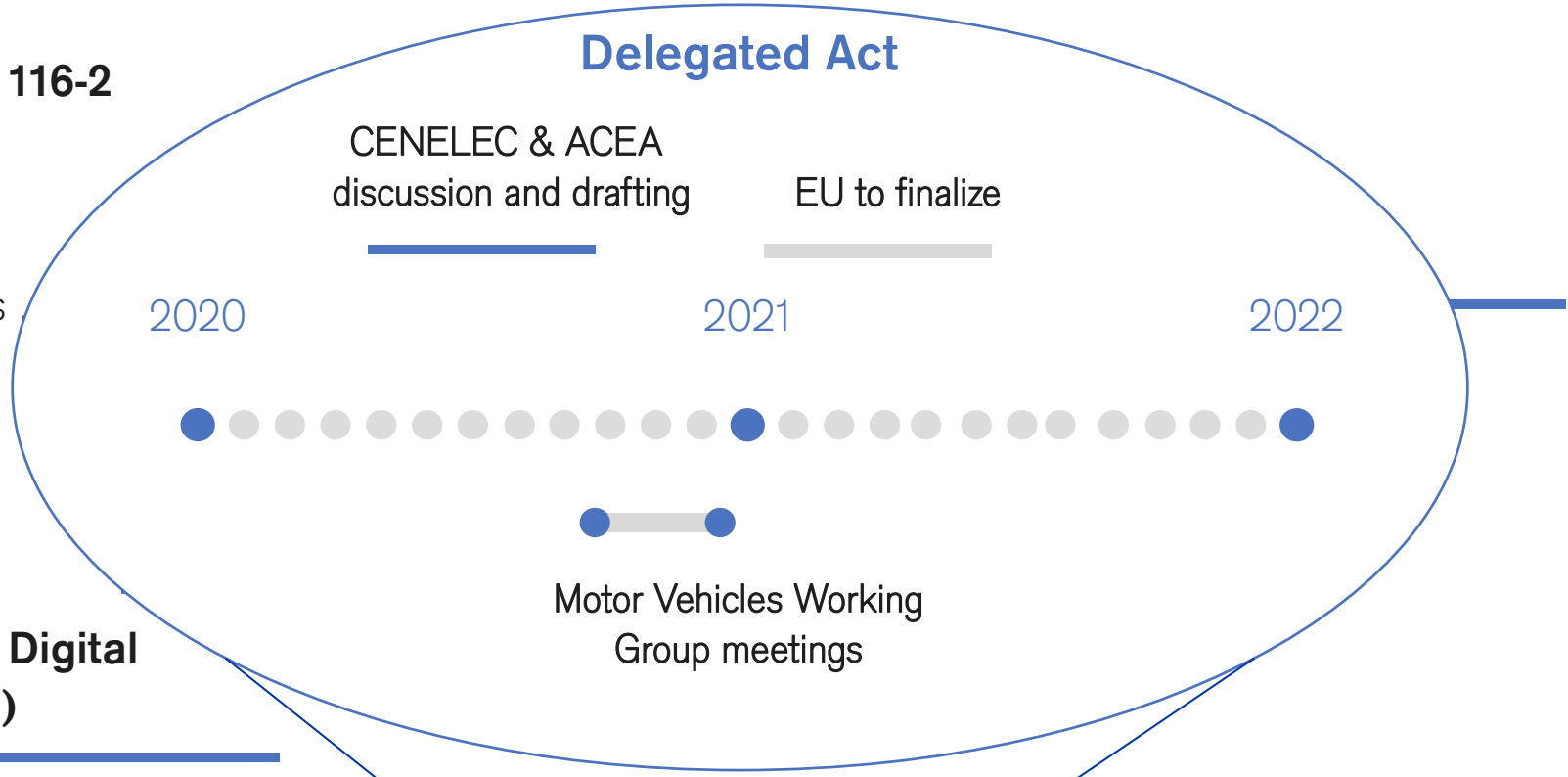
New GSR in place

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

Past and next steps

already decided and worked on in BTTF 116-2

– include additional physical layer, mainly for commercial vehicles
– include technical progress (electric vehicles



Standardised Digital Interface (LIN)

Installation Document

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

General points proposed for the delegated act

Connection

Standardized connection' means a specified connection between the alcohol interlock and the vehicle as described in the installation document

Access to information

The installation information should .... be available to the independent operators concerned and in particular to the employees that are engaged in the relevant activities, based on an authorisation by accredited entities, as covered by the 'Scheme for accreditation, approval and authorization to Access Security-related Repair and Maintenance Information (RMI)' ....

Key technical points proposed for the delegated act

Retrofit

It shall be possible to fit or retrofit an alcohol interlock that complies with European Standards EN 50436-1:2014 or EN 50436-2:2014 in all motor vehicles of categories M and N.

OEM fit

Motor vehicles that are fitted with original equipment alcohol interlocks complying with European Standards EN 50436-1:2014 or EN 50436-2:2014 or later revisions thereof are deemed to meet the requirements of this Regulation.

Principles

The principle for the installation of an alcohol interlock requires the following connection to the vehicle:

- either the information regarding battery feed, ground, vehicle ready and start enabler,
- or the information regarding battery feed, ground, vehicle ready and start allowing or prohibiting input/output line, and an optional engine run / vehicle moving signal line.
- or a data bus connection.

Distribution of information

Vehicle manufacturers shall put in place the necessary arrangements and procedures to ensure that vehicle alcohol interlock facilitation information, in the form of relevant details of the standardised connector of the standardised installation document, that shall be accessible in accordance with Annex X of Regulation (EU) 2018/858

Conclusion

The standards of the EN 50436 series together with Regulation (EU) 2019/2144 provide the chance to make traffic safer by enabling alcohol interlocks.
This chance has to be taken...

Thank you very much

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