



EN 50436  
Alcohol Interlock Standards  
Evolutions and future vision

01

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# Purposes and new legislation

# Purposes

- The purpose of alcohol interlocks is to enhance traffic safety by preventing persons with alcohol concentrations exceeding a set limit value from driving a motor vehicle.
- **EN 50436** series specifies test methods and essential performance requirements for alcohol interlocks (and vehicles) and gives guidance for decision makers, purchasers and users.

# Regulation (EU) 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;**

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## Who is doing the Job?

# CENELEC BTTF 116-2

The Group that works on Alcohol Interlock Standards in Europe

The Task Force of the Technical Board 116-2 of CENELEC, the European Committee for Electrotechnical Standardisation, developed the series of European alcohol interlock standards EN 50436.

The initiative for the connectivity improvement is aligned with the needs of the European commission.



## Members and Participants

Members from National Standardisation Committees & additional experts

Road Safety Authorities and Organisations

Alcohol Interlock Manufacturers

Testing Laboratories

Automotive Industry

European Automobile Manufacturers' Associations (ACEA, JAMA)

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# EN 50436 - Overview

# 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





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## One standard

Six parts supporting the new type approval regulation

(presented in historical order)

# EN 50436-1

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

- measurement accuracy of the alcohol concentration,
- environmental tests with different ambient temperatures and humidity,
- tests of time to be ready,
- durability tests with vibrations and dropping,
- measures against circumvention and manipulation,
- influence of other exhaled gases than alcohol,
- long term behaviour,
- electrical tests for supply voltage and durability against short circuits,
- electromagnetic compatibility and electrical disturbances,
- content of the instructions for installation and use.



EN 50436-1:2014

Instruments for drink-driving-offender programs

The application of EN 50436-1 ensures the **proper, safe and reliable** operation of alcohol interlocks in the wide range of potential

# EN 50436-1

## Instruments for drink-driving-offender programs

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Installation Document



Reflects the needs of professional and private use

In its currently 2nd edition

describes only the differences in the requirements compared to part 1.



EN 50436-2:2014

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

EN 50436-2 concerns large(st) number of drivers and vehicles.  
Applies to professional and private use

# EN 50436-1

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## Supplement to EN 50436-1 and EN 50436-2

- It specifies additional security requirements for the protection and handling of event records which are stored in the data memory of alcohol interlocks and which may be downloaded, processed and transferred to supervising persons or organizations.
- Optional accessory devices of the alcohol interlock (e.g. cameras or GPS systems) generating data related to event data of the alcohol interlock, as well as accessory devices handling or transferring data from a drink-driving-offender programme come also under this standard.



EN 50436-6:2015

## Data security

The application of EN 50436-6 is to be decided by the respective legislation or the vehicle fleet operator.

# EN 50436-1

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## Supports stakeholders through guidance

- Introduces alcohol interlocks for commercial and professional use in drink driving offender programmes
- Gives insight into technology and application
- Provides answers to frequently asked question

It is assumed that the recommendations are used for alcohol interlocks fulfilling the technical requirements given in the other parts of EN 50436

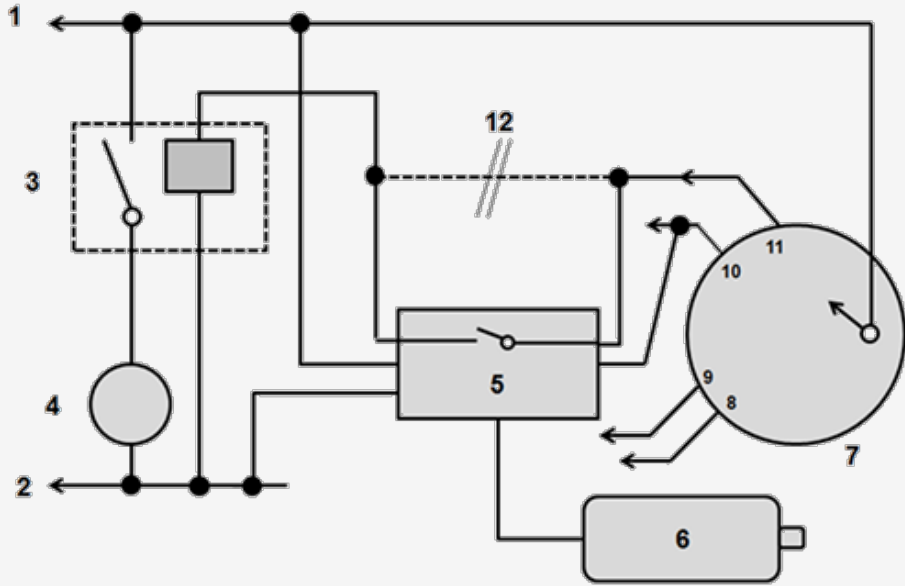


EN 50436-3:2016

Guidance for authorities, decision makers, purchasers and users

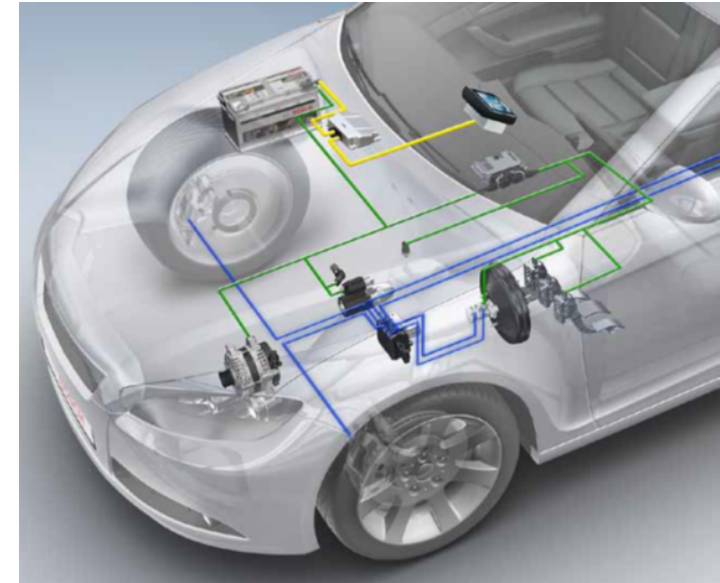
The application of EN 50436-6 it is not mandatory and it does not contain any requirements. It is a source for e.g. best practices

# New Task



classical installation  
scheme

new methodology was required to transform the classical installation pattern and make alcohol interlocks easily available for modern vehicles



modern integrated  
vehicle

# Two Step Strategy

supports

- the installation in moderately and highly complex vehicles
- decouples installation advice and technical processes

Standardised Digital Interface (LIN)

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Installation Document

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2014

2015

2016

2017

2018

2019

2020

# EN 50436-1

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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 referenced 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 needs to comply and the necessary functionality needs to be available



EN 50436-7:2016

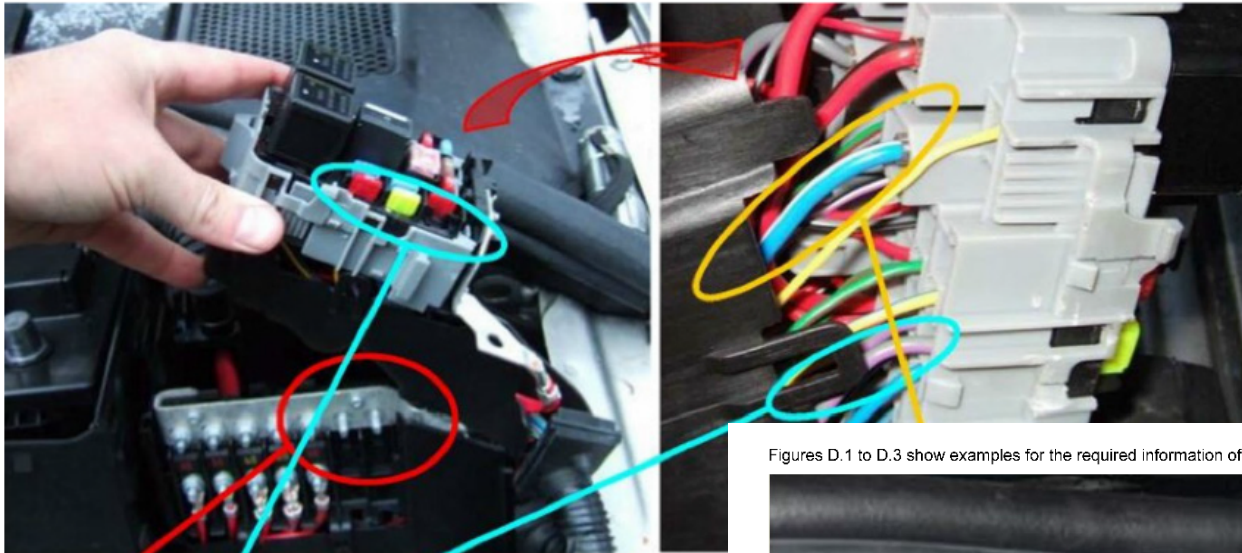
Installation document

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



# EN 50436-7:2016

## Installation document



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

Function	Cable or pin	Position of connection
<b>Battery feed (terminal +30), uninterrupted<sup>a</sup></b> 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 mm <sup>2</sup>	Connector X2 in central fuse box in engine compartment
<b>Ground (terminal -30)</b>	Screw terminal at driver's door at A-pillar 2,5 mm <sup>2</sup>	The rear one of three terminals
<b>Start enabler<sup>b</sup></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 mm <sup>2</sup>	Connector C5 in central electronic module
<b>Input / Output</b> 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 mm <sup>2</sup> Signal HIGH: start / move prohibited	Connector C5 in central electronic module
<b>Data bus connection<sup>c</sup></b> 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 mm <sup>2</sup> LIN HIGH: Yellow cable Pin 6 2,5 mm <sup>2</sup> or alternatively Connector according to prEN 50436-4 (Accessory part number 123456)	Connector C6 in central electronic module or alternatively Connector behind glove compartment



Figure D.1 — Location of ground installation point

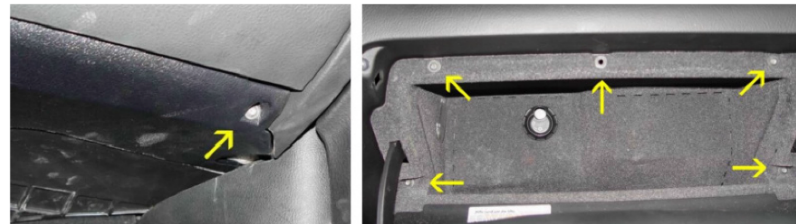


Figure D.2 — Taking apart to reach an installation point by minimizing damages

### Standardised information

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

# EN 50436-1

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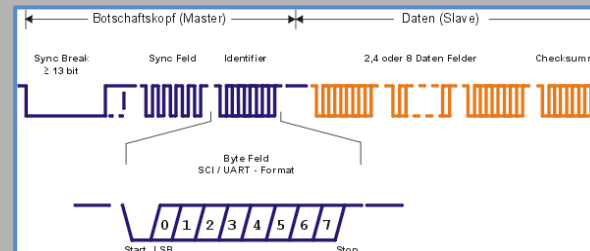


Offers a shared interface between alcohol interlock and vehicle

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



Frame identifier	Status Payload								Check sum
	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	



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

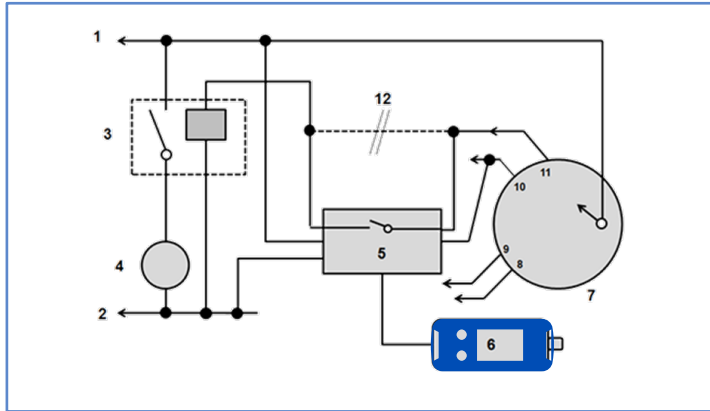


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How do EN 50436-7 and EN50436-4 interact  
in support of the new type approval regulation?

# EN 50436-7 opens three options (interfaces) to support alcohol interlock installations

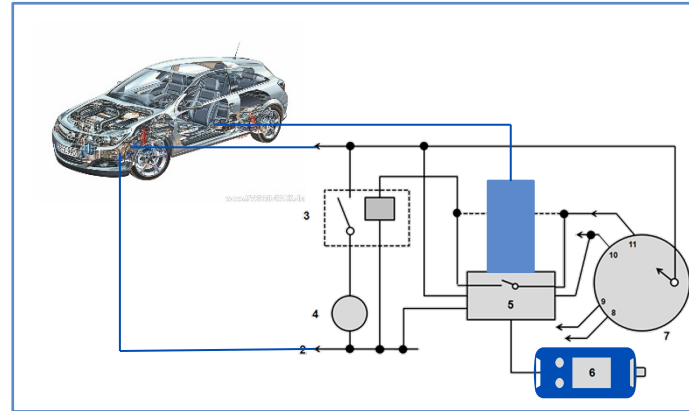


## Classical Installation

### 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.

# Which digital connection to use?

- EN 50436-4 is not mandated by EN 50436-7, this makes proprietary solutions possible,
- proprietary solutions would then be needed to be fully disclosed in order to fulfil EN50436-7,
- **EN 50436-4 provides a standardised digital interface that facilitates the fitting of aftermarket alcohol interlock devices in motor vehicles**

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What is to come next?

# Next Steps

already decided and worked on in BTTF  
116-2

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

3<sup>rd</sup> edition of parts 1 and 2

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Process to distribute the installation document

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Standardised Digital Interface (CAN J1939)

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Standardised Digital Interface (LIN)

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Installation Document

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2014

2015

2016

2017

2018

2019

2020

2021

# Thank you very much

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