BS EN 50436-1:2023

BSI Standards Publication

Alcohol interlocks — Test methods and performance requirements

Part 1: Instruments having a mouthpiece and measuring breath alcohol for drink-driving-offender programs and general preventive use

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National foreword

This British Standard is the UK implementation of EN 50436-1:2023. It supersedes BS EN 50436-1:2014 and BS EN 50436-2:2014+A1:2015, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AUE/16, Data Communication (Road Vehicles).

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Alcohol interlocks - Test methods and performance requirements - Part 1: Instruments having a mouthpiece and measuring breath alcohol for drink-driving-offender programs and general preventive use

Ethylotests antidémarrage - Méthodes d'essais et exigences de performance - Partie 1: Appareils équipés d'un embout qui mesurent le taux d'alcoolémie dans l'air expiré, pour programmes de lutte contre la conduite en état d'ivresse et à usage préventif général

Alkohol-Interlocks - Prüfverfahren und Anforderungen an das Betriebsverhalten - Teil 1: Geräte mit Mundstück zur Messung des Atemalkohols für Programme mit Trunkenheitsfahrern und für den allgemein-präventiven Einsatz

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European foreword

This document (EN 50436-1:2023) has been prepared by CLC/BTTF 116-2 “Alcohol Interlocks”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-06-19
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-06-19

This document supersedes EN 50436-1:2014 and EN 50436-2:2014 and all of their amendments and corrigenda (if any).

EN 50436-1:2023 includes the following significant technical changes with respect to EN 50436-1:2014 and EN 50436-2:2014:

— EN 50436-2 was integrated into EN 50436-1 and all essential requirements incorporated into EN 50436-1;

— Clause 1, Scope, was updated to consider the requirements from Part 2;

— Clause 3, Terms and definitions, definitions were added for immobiliser, alcohol interlock, digital interface, low-power-consumption state and handset. Some existing definitions were updated;

— Clause 4, General requirements, was updated to reflect current communication requirements;

— Clause 6.6, Low-power-consumption state, the current in low-power-consumption state of the alcohol interlock was changed from 5 mA to 1 mA at 12 V and at 24 V;

— Clause 6.7, Electrical disturbances, was updated;

— Clause 6.7.2, Supply lines, test levels were adjusted;

— Clause 6.9, Electromagnetic compatibility, both notes were integrated into one note with reference to the EMC and RED Directives;

— Clause 7, Calibration curve, the tolerance was changed from ± 0,02 mg/l or ± 15 % of the nominal value to ± 0,02 mg/l or ± 10 % of the nominal value;

— Clause 8.4, Drop test, a description for the handset was added;

— Clause 9, Environmental test, the procedure for the test was revised and tolerances added where necessary;

— Clause 10, Breath sample, was revised to add tolerances to the test gas flow;

— Clause 11.1, Test gases, carbon dioxide was added;

— Clause 12.6, Filter, the complete clause was updated to distinguish between tube filter and disc filter;

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— Clause 12.6.1, Tube Filter, the charcoal was specified to a mixture of pieces with diameters of 5 mm to 8 mm;

— Clause 12.7, Condensation, the clause was updated;

— Clause 12.8, Water, the clause was updated;

— Clause 12.10, Removal of handset, two additional tests were added;

— Clause 15.1, Instructions for installation, a note with the reference to EN 50436-7 was added;

— Clause 17, Labelling and marking, further requirements were added.

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Introduction

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

The content and requirements of this part of EN 50436 are based on the experience and necessities of using alcohol interlocks to prevent drink driving in several countries over several decades.

Therefore, alcohol interlocks to be used in all general preventive programmes and those for drink driving offenders and legally regulated programmes monitored or controlled in a comparable way should comply with this document.

Part 3 of this series of standards gives information on how to implement the usage of alcohol interlocks.

The purpose of the EN 50436 series is to specify essential performance requirements and to provide the respective test methods for available technologies. The technology of alcohol interlocks continues to evolve, and further innovations can be expected. These could be considered in new parts or revisions of this document.

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1 Scope

This document specifies test methods and performance requirements for alcohol interlocks having a mouthpiece. It covers alcohol interlocks to be used in all general preventive programmes and those for drink driving offenders and legally regulated programmes monitored or controlled in a comparable way.

This document can also be used for alcohol interlocks intended for other applications.

This document is directed at test laboratories and manufacturers of alcohol interlocks. It defines requirements and test procedures for type testing.

Several parameters (such as alcohol concentration or breath volume) are specified in this document for the purpose of type testing according to this document only.

NOTE It can be necessary due to national regulations or depending on user requests to set the values of the prescribed parameters differently when the alcohol interlocks are in use.

This document also applies to alcohol interlocks integrated into control systems of the vehicle as well as to accessory devices connected to the alcohol interlock.

This document does not apply to

— instruments measuring the alcohol concentration in the ambient air in the vehicle,

— alcohol interlocks not having a mouthpiece,

— methods of installation and connections to the vehicle.

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 50436-4, *Alcohol interlocks — Test methods and performance requirements — Part 4: Connection and digital interface between the alcohol interlock and the vehicle*

EN 60068-2-78, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state* (IEC 60068-2-78)

EN 60529, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529)

ISO 7637-2, *Road vehicles — Electrical disturbances from conduction and coupling — Part 2: Electrical transient conduction along supply lines only*

ISO 7637-3, *Road vehicles — Electrical disturbances from conduction and coupling — Part 3: Electrical transient transmission by capacitive and inductive coupling via lines other than supply lines*

ISO 10605, *Road vehicles — Test methods for electrical disturbances from electrostatic discharge*

ISO 16750-1, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 1: General*

ISO 16750-2:2012, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 2: Electrical loads*

ISO 16750-3:2012, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 3: Mechanical loads*

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ISO 16750-4:2010, *Road vehicles — Environmental conditions and testing for electrical and electronic equipment — Part 4: Climatic loads*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50436-4 and the following apply.

3.1
immobiliser
device which is intended to prevent the vehicle being driven powered by its own motor

Note 1 to entry: In this document the expression motor includes combustion engine, electric motor or hybrid power unit.

3.2
alcohol interlock
device that acts as a vehicle immobiliser which, when installed, can be brought into the not blocking state only after the presentation and analysis of an accepted breath sample with an alcohol concentration below a limit value

3.3
breath sample
breath sample taken under forced expiration

3.4
accepted breath sample
breath sample fulfilling set requirements for volume, flow, exhalation time and other human breath sample characteristics

Note 1 to entry: The acceptance of a breath sample is independent from the breath test alcohol concentration result.

3.5
not accepted breath sample
breath sample that does not fulfil the set requirements or is otherwise aborted by the device

3.6
breath alcohol concentration
mass concentration of ethanol, expressed in mg/l (milligram ethanol per litre breath), in a breath sample delivered into an alcohol interlock

3.7
breath alcohol concentration limit
set value of breath alcohol concentration at or above which the alcohol interlock records a fail test result

3.8
breath test
providing a breath sample to an alcohol interlock

3.9
pass test
breath test provided with a measured breath alcohol concentration below the breath alcohol concentration limit

3.10
fail test
breath test provided with a measured breath alcohol concentration at or above the breath alcohol concentration limit

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3.11
mouthpiece
part through which the breath sample is delivered into the alcohol interlock

3.12
blocking state
state in which the alcohol interlock immobilises the vehicle

3.13
not-blocking state
state in which the alcohol interlock does not immobilise the vehicle

3.14
ready for test
indication that the operating parameters of the alcohol interlock are met

3.15
warm-up time
time interval after the activation of the the alcohol interlock until the internal components of the device reach a minimum operating temperature

3.16
initial test
breath test provided while the alcohol interlock is in the blocking state

3.17
retest
breath test provided while the alcohol interlock is in the not-blocking state

Note 1 to entry: The retest function is one of the measures used in the detection of circumvention.

3.18
retest period
time interval after the retest request to provide an accepted breath sample

3.19
start period
time interval after an accepted breath sample has been delivered with a pass test result during which the alcohol interlock remains in the not-blocking state

3.20
restart period
time interval after the ignition switch or equivalent is switched off and during which the alcohol interlock remains in the not-blocking state

3.21
override
permissible method of causing the alcohol interlock to enter the not-blocking state without providing a breath sample

Note 1 to entry: The override function is for use in exceptional circumstances only.

3.22
bypass
unauthorised method of causing the vehicle to ignore the alcohol interlock blocking state

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3.23
tampering
unauthorised change to or interference with the installation or function of the alcohol interlock in the vehicle

3.24
data memory
record of breath test results and other events with date and time stored in the internal memory of the alcohol interlock

3.25
supply voltage
voltage obtained from the electric power source of the vehicle for operation of the alcohol interlock

3.26
calibration interval
time period between calibrations during which the alcohol interlock fulfils the accuracy requirements for the measurement of the breath alcohol concentration

3.27
service reminder
notification by the alcohol interlock of a pending service requirement

3.28
recall
notification by the alcohol interlock of an early service requirement

3.29
manufacturer
person or body that is responsible for the design, construction and/or production of the alcohol interlock and is responsible for the conformity of production

3.30
aftermarket installation
any installation of an alcohol interlock in a vehicle after the original production of a vehicle

3.31
digital interface
shared boundary used for the exchange of information between devices

3.32
low-power-consumption state
state in which the alcohol interlock draws the minimum power from the vehicle while being responsive to an activation signal for operation

3.33
handset
component of the alcohol interlock into which the breath sample is delivered through the mouthpiece

3.34
lockout
condition in which the alcohol interlock will not accept a breath sample and remains in the blocking state

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