

Dräger Interlock

酒精鎖



BEST QUALITY

德國

MADE IN GERMANY

製造

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Dräger -Germany 1889 (德國.魯北克.)

Over 16000 Employees, 130 countries

Dräger Safety Taiwan 2003 (台灣分公司)

Dräger酒測器種類介紹



Since 1994



Dräger 酒精鎖介紹



Dräger Interlock 7000



Dräger Interlock 5000



1. Switch on ignition.



2. Request to submit breath sample.



3. Measurement of breath alcohol concentration.



4. Breath sample accepted:
Starter is released.



5. Start engine.

Dräger Interlock 誤差值

Technical data

Measuring principle	Electrochemical DrägerSensor	
Measuring range	Up to 3.0 mg/L	
Ambient conditions		
For operation and storage	-40 °C to 85 °C 20 % to 98 % r. h. 600 to 1100 hPa No influence of changes in altitude on the measurement result	
Sensitivity drift	Typically 1 % of measured value / month	
Display	Display	
Calibration interval	Typically 12 months	
Dimensions (H x W x D)		
Handset	Approx. 138 mm x 61 mm x 36 mm	
Control unit	Approx. 148 mm x 90 mm x 32 mm	
Weight		
Interlock 5000 handset	Approx. 180 g	
Interlock 7000 handset	Approx. 178 g	
Control unit Interlock 5000	Approx. 195 g	
Control unit Interlock 7000	Approx. 240 g	
Voltage supply	12 V to 24 V	

隨著使用時間每個月會有量測值的1%誤差

即量測範圍0-3mg/L, 每過一個月會有0到最大0.03mg/L誤差

EMC 認證



EU-Konformitätserklärung
EU-Declaration of Conformity

Dokument Nr. / Document No. SE23415-03



Wir / we Dräger Safety AG & Co. KGaA, Revalstraße 1, 23560 Lübeck, Germany

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

ILxx00 (Interlock 7000)
ILxx00 (Interlock 7000)

und mit den folgenden Richtlinien unter Anwendung der aufgeführten Normen übereinstimmt
and is in compliance with the following directives by application of the listed standards

Bestimmungen der Richtlinie provisions of directive		Nummer sowie Ausgabedatum der Norm Number and date of issue of standard
(72/245/EWG) / 2009/19/EG (72/245/EEC) / 2009/19/EC ECE Regelung Nr. 10 Rev. 4 ECE Regulation No. 10 Rev. 4	EMV-Richtlinie für Kraftfahrzeuge Automotive EMC Directive (ECE Regelung Nr. 10 Rev. 5) (ECE Regulation No. 10 Rev. 5)	CISPR 25:2002+C:2004 ISO 7637-2:2004+A1:2008 ISO 11452-2:2004 ISO 11452-4:2005+C2009
2014/53/EU	RED-Richtlinie REDirective	EN 60950-1:2006+A11:2009+A12:2011+A1:2010+A2:2013+AC:2011 EN 62311:2008 EN 301 489-1 V2.1.1:2017-02 EN 301 489-17 V3.1.1:2016-11 EN 300 328 V2.1.1:2016-11 EN 50498:2010
2011/65/EU	RoHS-Richtlinie RoHS Directive	EN 50581:2012

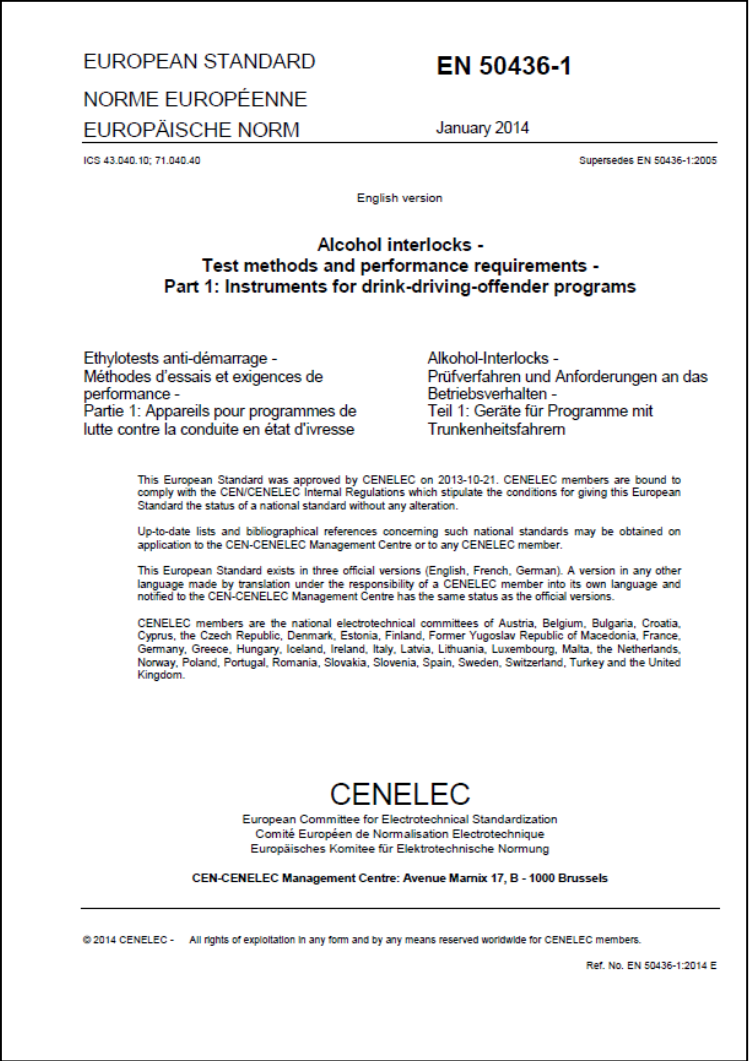
EMV-Richtlinie für
Kraftfahrzeuge
Automotive EMC Directive

Lübeck, 2017-09-21

Ort und Datum (jjjj-mm-tt)
Place and date (yyyy-mm-dd)


Dr. Marcus Romba
Head of Electronic Engineering
Head of Product Qualification
Safety Products
Research & Develop

Dräger酒精鎖重要認證



EN 50436-1:2014

針對酒精鎖的測試方法與性能表現的認證
執法用型式

Alcohol interlocks - Test methods
and performance requirements

Part 1: Instruments for drink-
driving-offender programs

酒精鎖重要認證

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

ICS 43.040.10; 71.040.40

EN 50436-2

January 2014

Supersedes EN 50436-2:2007

English version

Alcohol interlocks -
Test methods and performance requirements -
Part 2: Instruments having a mouthpiece and measuring breath alcohol
for general preventive use

Ethylotests anti-démarrage -
Méthodes d'essais et exigences de
performance -
Partie 2: Appareils équipés d'un embout
et mesurant le taux d'alcoolémie de l'air
expiré, à usage préventif général

Alkohol-Interlocks -
Prüfverfahren und Anforderungen an das
Betriebsverhalten -
Teil 2: Geräte mit Mundstück zur Messung
des Atemalkohols für den allgemein-
präventiven Einsatz

This European Standard was approved by CENELEC on 2013-10-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

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Ref. No. EN 50436-2:2014 E

EN 50436-2:2014

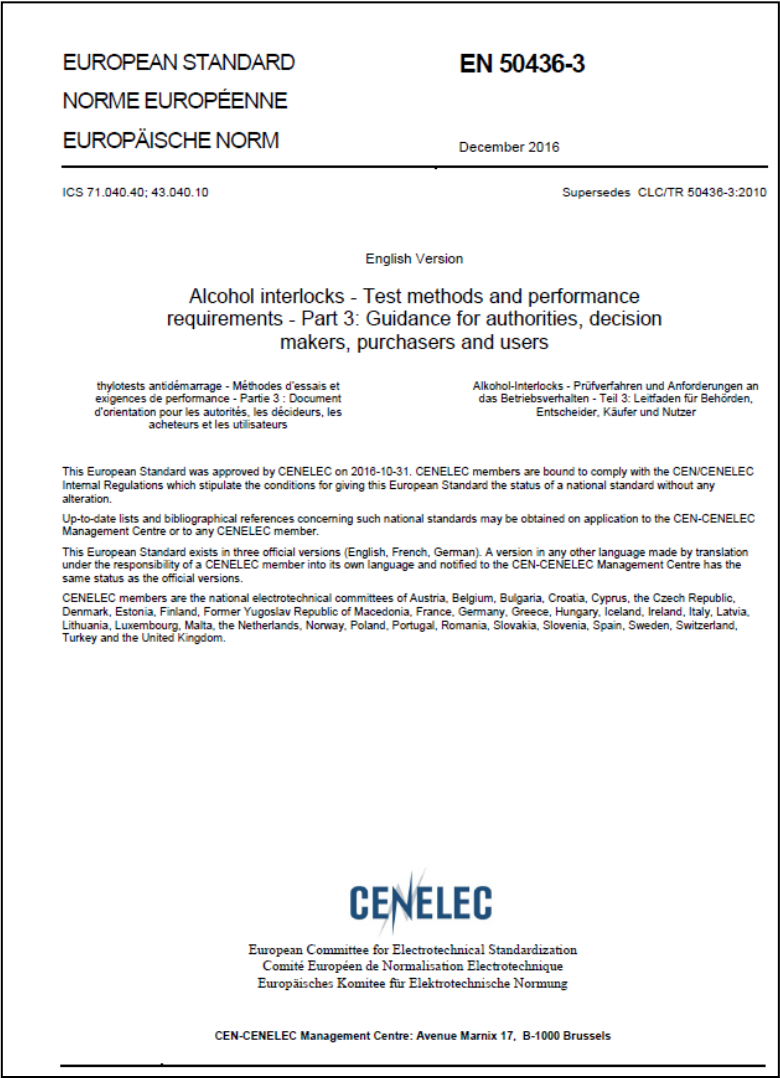
針對酒精鎖的測試方法與性能表現的認證

民用型式

Alcohol interlocks - Test methods
and performance requirements

Part 2: Instruments having a
mouthpiece and measuring breath
alcohol
for general preventive use

酒精鎖重要認證



EN 50436-3:2010

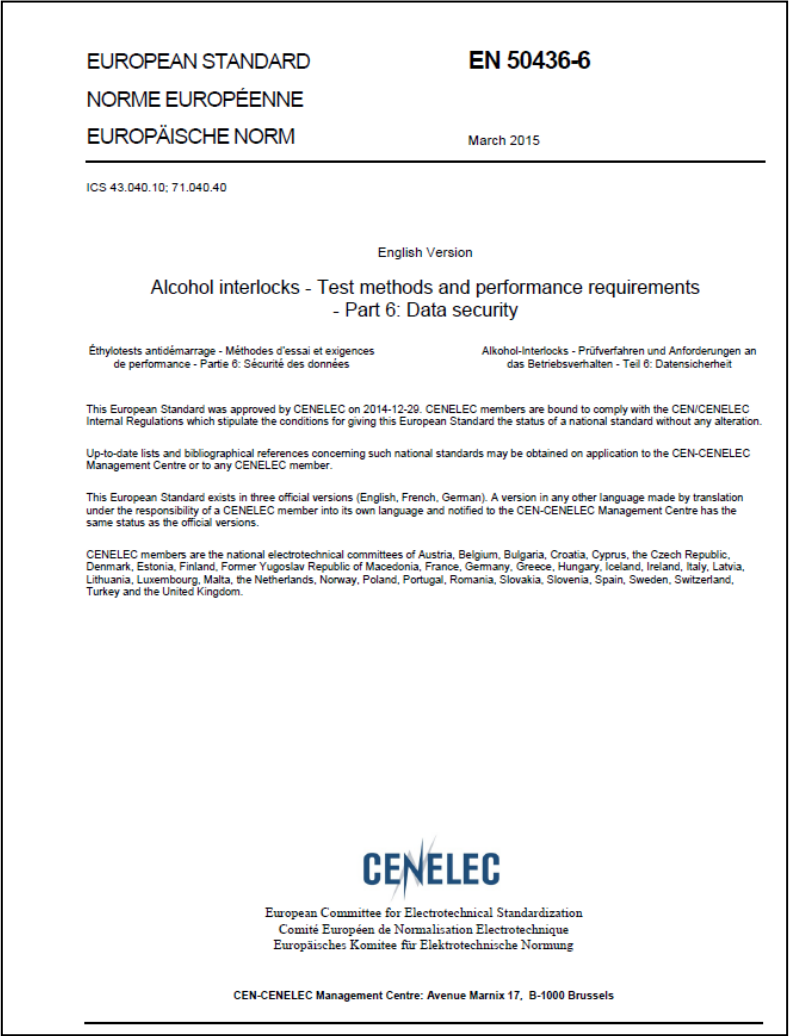
針對酒精鎖的測試方法與性能表現的認證

對使用者提供充足的操作/指引文件

Alcohol interlocks - Test methods
and performance requirements

Part 3: Guidance for decision
makers, purchasers and users

酒精鎖重要認證



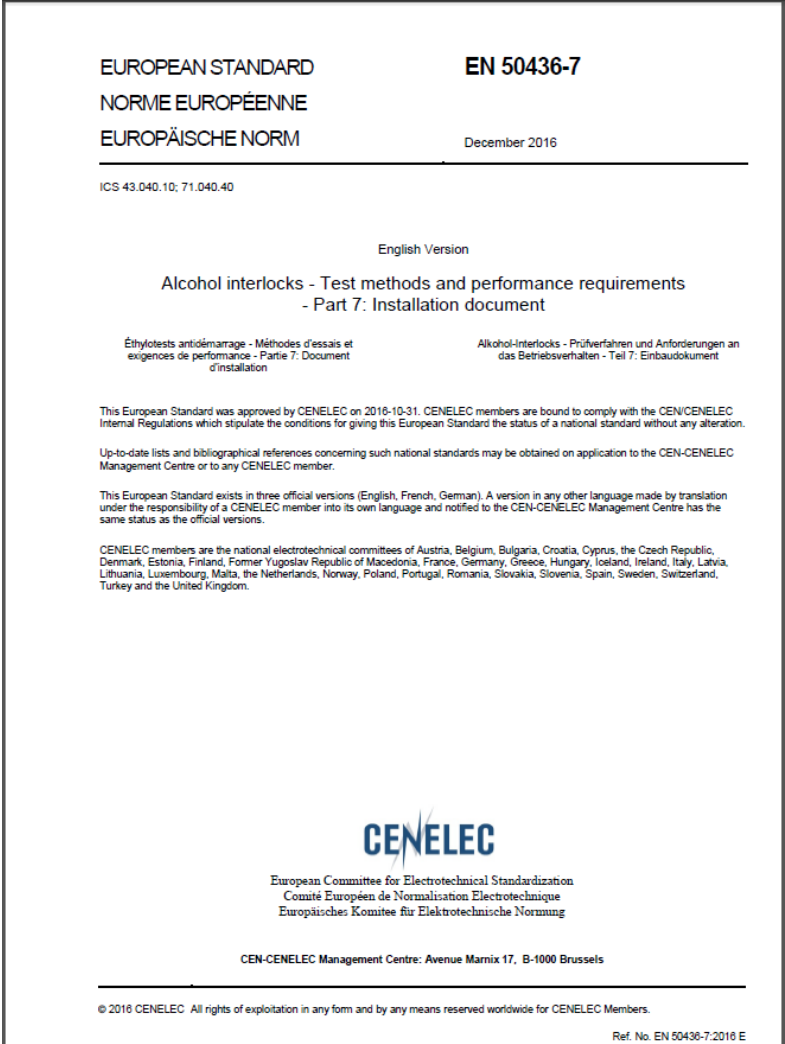
EN 50436-6:2015

針對酒精鎖的測試方法與性能表現的認證 資訊安全

Alcohol interlocks - Test methods and performance requirements

Part 6: Data security

酒精鎖重要認證



EN 50436-7:2019

針對酒精鎖的測試方法與性能表現的認證
完整的酒精鎖安裝文件資料

Alcohol interlocks - Test methods
and performance requirements
Part 7: Installation document

酒精鎖重要認證

歐盟最高環保標準 E1



Kraftfahrt-Bundesamt

DE-24932 Flensburg

E1

MITTEILUNG

ausgestellt von:
Kraftfahrt-Bundesamt

über die Erweiterung der Genehmigung
eines Typs eines elektrischen/elektronischen Bauteiles nach der
Regelung Nr. 10

COMMUNICATION

issued by:
Kraftfahrt-Bundesamt

concerning approval extended
of a type of electrical/electronic sub-assembly with regard to
Regulation No. 10

Nummer der Genehmigung: 047310
Approval No.:

Erweiterung Nr.: 01
Extension No.:

1. Fabrikmarke (Handelsname des Herstellers):
Make (trade name of manufacturer):
Dräger Safety AG & Co. KGaA

2. Typ:
Type:
ILxx00

Ausführung(en):
Version(s):
Interlock 5000
Interlock 7000
Interlock 7000 Scania

Handelsbezeichnung(en):
General commercial description(s):
ILxx00

Dräger酒鎖大事件

400,000
Interlock
devices.



In Europe, Dräger Interlocks
have a market share of
60 %.

It takes **32** steps and around
15 to 20 minutes
to assemble a
Dräger Interlock 7000.



To stop drivers drinking up to
the limit, Dräger Interlocks
do not show a part per
thousand value.

The handset of each
Dräger Interlock 5000 and 7000 contains
0.02 grams of gold,
to stop the circuit board's copper
coating oxidizing with nickel.

"At least **5,600 lives** could be saved every year in the EU
if all drivers respect the drink driving legislation."
Antonio Avenoso, Executive Director of the European Transport Safety Council



In **2014** Dräger installed an Interlock
in a motor boat for the first time.



The mouthpiece
of the Interlock 7000 is
completely biodegradable.

For example, on a
compost heap with
plenty of bacteria
it takes less than
6 months
to break down.

The Dräger Interlocks work
flawlessly, even at extremes of
-40 °C and +85 °C



On July 12, 2016 Stefan Dräger
wrote to Elon Musk. When they met in
Berlin he wanted to convince Elon to
implement the interface according to
EN 50436-7 promoted by Dräger
in the Tesla for easy installation.



A finished Interlock handset
comes off the production
line in Lübeck every
4 to 5 minutes.

車廠安裝實績

- 在汽車製造產線直接導入Dräger酒精鎖

Mercedes



IVECO



Scania



特地為使用量大的客戶訂製客製化款

- Dräger酒精鎖全球實績



全球實績(專題報導)

丹麥最大巴士集團 Arriva

1200 台 Dräger Interlock



全球實績(專題報導)

德國大型運輸集團HOYER-Group

400台Dräger Interlock

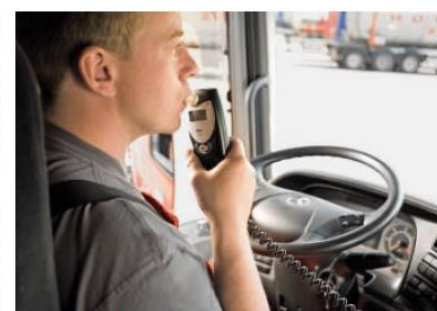


What's the point of having the latest technology, if the driver has been drinking alcohol?

includes the company's zero tolerance policy when it comes to being under the effects of alcohol while on duty. Alcohol and the often underestimated dangers of residual alcohol in the blood are a risk factor in many jobs. "Truck drivers are no different than the rest of society," says Krohn. But there is a major difference, he adds: "A truck driver isn't sitting at a supermarket checkout; he's at the wheel of a rig with 25 tons of hazardous goods on board, rolling down busy roads."

The World Health Organization (WHO) estimates that 2.5 million people die annually from the effects of alcohol consumption, including road-traffic accidents. To help counteract this scourge, Hoyer conducts spot checks for alcohol consumption, not only at its locations but also en route. The introduction of tests was made possible by a works agreement, which applies not only to drivers but also to commercial employees. This ensures that the policy enjoys widespread acceptance. "It prevents the creation of a two-tier system," Krohn explains. Equality in the workplace is a persuasive argument, in addition to being a fundamental element of German law. In addition, the medical examinations for new drivers include alcohol and drug tests.

It's more difficult to test drivers once they have left the depot, of course, particularly if they are on international runs. The need for efficiency alone rules out the possibility of constantly shadowing them on their routes. For this and other reasons, last year Hoyer equipped 30 of its vehicles with the Dräger Interlock XT*, a breath-alcohol measuring instrument



Breath-alcohol vehicle immobilizer: First blow, then go.



Hazardous goods: The contents of a tank container are precisely declared.

全球實績(專題報導)

荷蘭大型運輸集團 Kuipers Logistics

130台 Dräger Interlock

On the Road:
Safely without Alcohol.

Dräger Interlock®



Harry Kuipers' assessment:
"We are very happy with Dräger Interlocks, because the number of accidents has dropped significantly and we can be confident that drivers are not getting behind the wheel while under the influence of alcohol. It is an enormous relief to have this certainty."

全球實績(專題報導)

甚至連農業市場都有Dräger酒精鎖的蹤跡

在德國Dräger酒精鎖被廣泛的使用在
葡萄酒莊的拖拉機上



全球實績

目前受法令規範巴士需強製安裝酒精鎖的國家有：

Dräger酒精鎖占有最大市場銷量



Preventive Use – but legally required

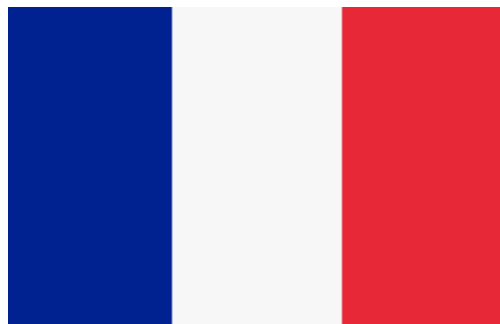
- Buses and taxis for school children (Finland)
- Interregio buses (France)
- all newly registered buses since January 2019 (Norway)

Finland (10.000),
France (65.000)
Norway (3.000)



芬蘭

10000 台



法國

65000 台



挪威

3000 台

上市時間

1953



2020



- Dräger製造酒測器的經驗已有**67**年之久(1953 - 2020)
- 而第一台酒精鎖Dräger Interlock 1在**1994**年誕生(距今**26**年的經驗)
- 最新一代酒精鎖DrägerInterlock5000/7000在**2015**年推出

1994 → 2020



1

XT

7000

Interlock

登入酒精鎖軟體可做各種設定

Interlock Manager - Product Support

Lance Lee (Administrator - no sync) Logout
Draeger Safety Taiwan Co. Ltd.

Service Connected device Maintenance Parameters * Data management Application settings

Common * Hardware controls * Monitoring * Violations * Initial test * Retest * Specials * Camera * Cellular/GPS * GPS * Custom controls * Events * Fleet management *

General

Breath sample volume: 1200 mL

Measurement unit: µg/L (BREATH)

Free start timer

Free start timer 1: 00:02:00 hh:mm:ss

☐ Free start timer 2: 00:02:00 hh:mm:ss

Miscellaneous

Abort time: 02:00 mm:ss

☐ Time window: 10:00 mm:ss

☐ Disable test refusal signaling and events

☐ Mandatory confirmation tests

Waiting Time: 5 min Count: 2

Parameter information

Configuration set

Name: -

Version: -

Modified: -

Author: -

Source: -

Description:

Pass Reset all lockout counters

Warning Limit value: 143 µg/L Mandatory passed confirmation test Abort time: 15 min Count: 2 Reset all lockout counters

Fail Limit value: 143 µg/L ☒ Lockout 1 Count: 3 Duration: 0:15 hh:mm

☐ Lockout 2 after first Lockout 1 Count: 6 Duration: 0:30 hh:mm

High Limit value: 429 µg/L ☒ Lockout 2 Count: 1 Duration: 0:30 hh:mm

Display number of tests High result lockout

Print

Upload to device

Download from device

Save configuration

Load configuration

Delete configuration

Service Connected device Maintenance Parameters * Data management Application settings

Common * Hardware controls * Monitoring * Violations * Initial test * Retest * Specials * Camera * Cellular/GPS * GPS * Custom controls * Events * Fleet management *

General

- ☒ Perform retest
- ☒ Perform multiple retests
- ☐ Abort retest on failed retest
- ☐ Retest refusal for failed retests
- ☐ Retest engine Off
- ☐ Sleep mode
- ☐ Starter relay closed
- ☐ "Retest failed" violation signaling
- ☐ Mask general retest violation processing
- ☐ Retest refusal violation signaling
- ☐ Retest lockouts after engine Off

Copy
initial test parameters

Random timer

Random timer 1:

5 to 15 min

- ☐
- Only after initial test failed

Random timer N:

15 to 45 min

- ☐ After sober driver verification succeed
- ☐ After retest failed
- ☐ After retest abort

Miscellaneous

Retest cycle time:

5 min

Number of retest cycles:

10 ☐ Mandatory

- ☐
- Mandatory confirmation tests

Waiting time:

5 min

Count:

2

Parameter information

Configuration set

Name: -
Version: -
Modified: -
Author: -
Source: -
Description:



Pass

Reset all lockout counters



Limit value:
Warning 143 µg/L

- ☐
- Mandatory passed confirmation test

Abort time:

15 min

Count:

2

Reset all lockout counters



Limit value:
Fail 143 µg/L

- ☒
- Lockout 1

- ☐
- Include refusals

- ☐
- Lockout 2 after

Count:

1

Duration:

0:15 hh:mm

Service Connected device Maintenance Parameters * Data management Application settings

Common * Hardware controls * Monitoring * Violations * Initial test * Retest * Specials * Camera * Cellular/GPS * GPS * Custom controls * Events * Fleet management *

General

☐ Camera

☐ Sober driver verification

Min. detection time: 300 s

Max. detection time: 600 s

Min. probability: 60

Marker detection

Initial test marker detection: Detection Off

Initial test marker detection timeout: 0 s

Retest marker detection: Detection Off

Retest marker detection timeout: 0 s

Miscellaneous trigger

- ☒ Random image after test
- ☒ Random image prior retest
- ☒ Untested engine run
- ☒ Ignition is On
- ☒ Movement detection
- ☒ HS disconnect violation
- ☒ Engine On
- ☒ Retest requested

Initial test trigger

- ☒ Passed
- ☒ Failed
- ☒ Refusal
- ☒ Warning
- ☒ High result
- ☒ Passed after failed
- ☒ Anti-circumvention
- ☒ Passed after High result
- ☒ Without marker detection
- ☒ Breath sample error

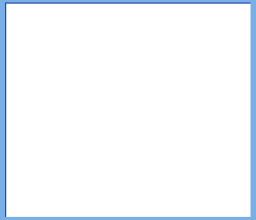
Retest trigger

- ☒ Passed
- ☒ Failed
- ☒ Refusal
- ☒ Warning
- ☒ High result
- ☒ Passed after failed
- ☒ Anti-circumvention
- ☒ Passed after High result
- ☒ Without marker detection
- ☒ Breath sample error

Parameter information

Configuration set

Name: -
Version: -
Modified: -
Author: -
Source: -
Description:



Print

Upload to device

Download from device

Save configuration

Load configuration

Delete configuration

吹嘴
易於更換；
位於手持終端背面

彩色顯示幕
帶文本消息顯示的使用者指導

手持終端（測量設備）
位於車輛內部

彩色 LED
指示燈

移動資料傳輸模
塊接口

控制單元
安裝在儀錶板下方；
記錄所有事件

手持終端接口

攝像頭接口

序列介面
用於與遠端資訊處理系統進
行數位通信

電纜
連接車輛電氣系統



D-98940-2013

技術資料

測量原理	電化學感測器
操作的環境條件	溫度 -40°C 至 85°C
就緒時間	<5秒 (0°C 以上) <60秒 (-20°C) <110秒 (-40°C)
顯示	手持終端中的圖形化彩色顯示幕，顯示完整文本消息
校準間隔	通常為 12 個月
資料記錄器	位於控制單元中，最多可記錄 500,000 個事件
尺寸 (高 x 寬 x 深)	手持終端約 138毫米 x 61毫米 x 36毫米 控制單元約 148毫米 x 90毫米 x 32毫米
重量	手持終端約 178克 控制單元約 240克
電源	12V 至 24V
用於起動器繼電器線路的開關繼電器	<16A (連續值)，<40A (峰值)， 輸出繼電器最高可切換至 48V
耗電量	<2,5 A (最大值)，<1mA (待機值)
認證	德國通用操作許可 (Allgemeine Betriebserlaubnis Deutschland) ； EN 50436-1:2014、EN 50436-2:2014、EN 50436-6:2015、E1 標誌、ECE 法規編號 10，以 及指令 (EC) 編號 661/2009 (最後適用的修訂 版)、NHTSA:2013、AS 3547 類型 4, CSA Z627-16, CSTTHVC-TR- 114
資料傳輸	紅外介面，藍牙®

安全責任
企業形象

Drive Safely

