Dräger Interlock® 7500

Installation instructions

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Contents

1 Safety-related information

– Before using this product, carefully read the associated instructions for use. This document does not replace the instructions for use.
– Installation may only be carried out by an authorised Dräger-Interlock® service centre or a specialist vehicle workshop following these installation instructions.

2 Conventions in this document

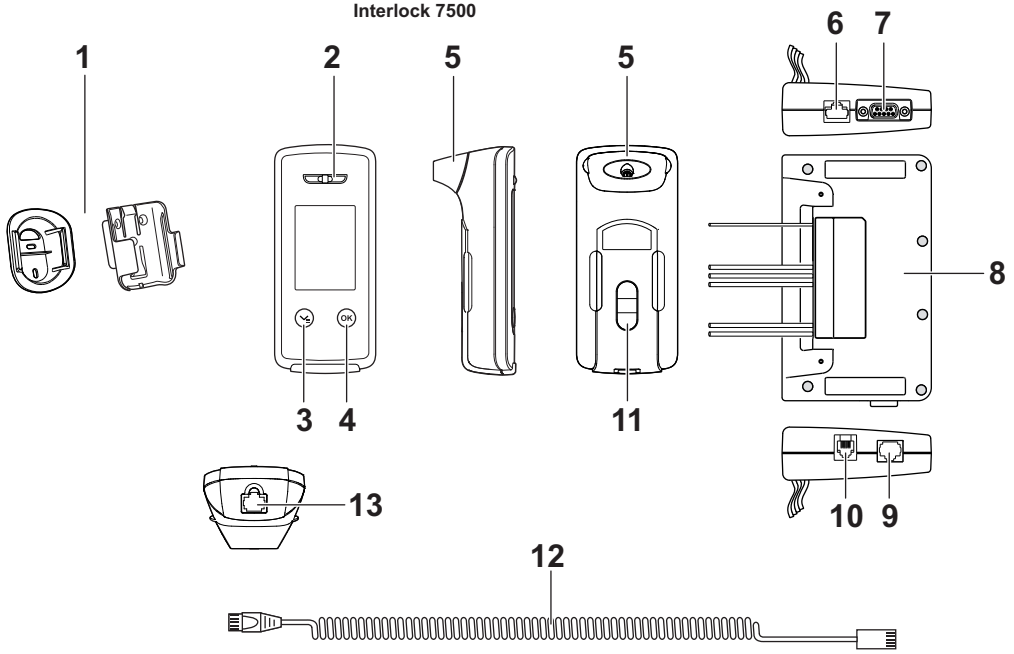
2.1 Meaning of the warning notices

The following warning notices are used in this document to alert the user to potential hazards. The meanings of the warning notices are defined as follows:

Warning sign	Signal word	Classification of the warning notice
⚠	WARNING	Indicates a potentially hazardous situation. If not avoided, it could result in death or serious injury.
⚠	CAUTION	Indicates a potentially hazardous situation. If not avoided, it could result in physical injury. It may also be used to alert against unsafe practices.
	NOTICE	Indicates a potentially hazardous situation. If not avoided, it could result in damage to the product or environment.

3 Description

3.1 Product overview



Legend

1	Holster for handset
2	Air outlet
3	Down/Menu button
4	OK button
5	Mouthpiece
6	Expansion box connection (optional)
7	GPRS module connection (optional)
8	Control unit
9	Bushing for plug connector on spiral cable
10	Camera connection
11	IR interface
12	Spiral cable
13	Bushing for plug connector on spiral cable

3.2 Description of the connection leads on the control unit

Terminal connections	Colour	Description
1	grey	Floating switching output for clearance to start (e.g. terminal 50)
	brown	
2	orange	Relay for connecting headlights, for example (optional)
	purple	
3	white	Relay for connecting horn, for example (optional)
	yellow	
4	blue	Terminal 15 (ignition)
5	black	Earth connection (terminal 31)
6	red	Positive power supply
7	white	Output switched to PIN 10
8	white	Output switched to PIN 10
9	white	Output switched to PIN 11 (earth)
10	white	Power supply (for PINs 7 and 8)
11	white	Earth connection (inputs/outputs)
12 LED+	white	External LED display connection (optional)
13 LED-	white	
14	white	Input, active Low (configurable)
15	white	Input, active High (configurable)
16	white	Input, active High for start detection (D+/light machine)

4 Installation

4.1 Requirements for installation

⚠ WARNING

Danger!

Alterations and additions to the device may cause danger.

Such alterations and additions invalidate the certificate of installation contained in the instructions for use.

► Do not make any alterations or additions to the device.

NOTICE
Install the device only for interrupting and connecting the starter relay control line.

- The Dräger Interlock 7500[1)] is intended for installation in motorised vehicles. These can have a power supply voltage of 12–24 V.
- Prior to installing the handset, please decide upon a suitable mounting location and method together with the owner of the vehicle.
- If the stand-by current consumption (see "Technical data", page 30) is too high for the particular vehicle, use a vehicle battery with higher capacity.
- The device is not a substitute for a vehicle immobilizer for theft protection.
- Install the control box in line with vehicle-specific stipulations.

4.2 Installation mode

⚠ CAUTION
The device is supplied in an installation mode, depending on configuration. In this mode, the device immobilizer is not yet enabled. The vehicle's engine can be started after the unit is installed without a breath sample being given. Deactivate the installation mode to put the device into operation.

4.3 Installation of components

- To begin the installation process, install all components temporarily at their intended positions.
- Ensure the suitability of the mounting locations and that the installation does not obstruct normal use of the vehicle.
- Ensure that the safety of passengers is not impaired.
- Choose mounting position where sufficient protection against water, dust and high temperatures is ensured.

4.3.1 Control unit

NOTICE
Only install the device permanently following consultation with the owner of the vehicle.
When installing the control unit, ensure that the connection cable for the handset is secured against tensile load (e.g., using a cable tie).

- Install control unit in as hidden a position as possible, such as under the seat or front dash on the steering column. Fix with cable ties.

4.3.2 Handset

⚠ WARNING
Do not install holster for the handset in front of air-bags.

- Decide upon mounting location for the holster for the handset ensuring minimal obstruction by the handset and easy accessibility for the driver.
- If the cable from the control unit to the handset is too tightly stretched or too short, re-position the handset, the control unit or both.

4.4 Connecting the leads

ℹ Check for any installation instructions specific to the vehicle, and if these exist, continue by following those instructions. A list of available installation instructions can be obtained from Dräger.

ℹ Ensure that all control unit cables, as well as newly established electrical connections to the vehicle, are firmly attached and are not exposed to any tensile stress following installation.
Dräger recommends bundling the control unit cables, e.g. with duct tape, to ensure they do not hang loose and thus preventing any manipulation.

4.4.1 Identifying Terminal 15 in the vehicle for Interlock installation

- Remove the cover or upholstered panels to gain access to the vehicle wiring.

1) Interlock is a registered trademark of Dräger.

Identifying Terminal 15 in the vehicle for Interlock installation:

– Constant (no switched positive from the ignition start switch),
– No run-on on Terminal 15 (e.g., if the ignition is off, the voltage on Terminal 15 must also switch off immediately and not remain active),
– No Terminal 15r (Wake-up) (e.g., no switch-off of the signal on Terminal 15 after a short time).

Optional:
If a constant Terminal 15 without run-on cannot be clearly identified or there are no more switched positives available, then a CAN Bus adapter can be used to generate terminal 15 for vehicles with CAN Bus control.

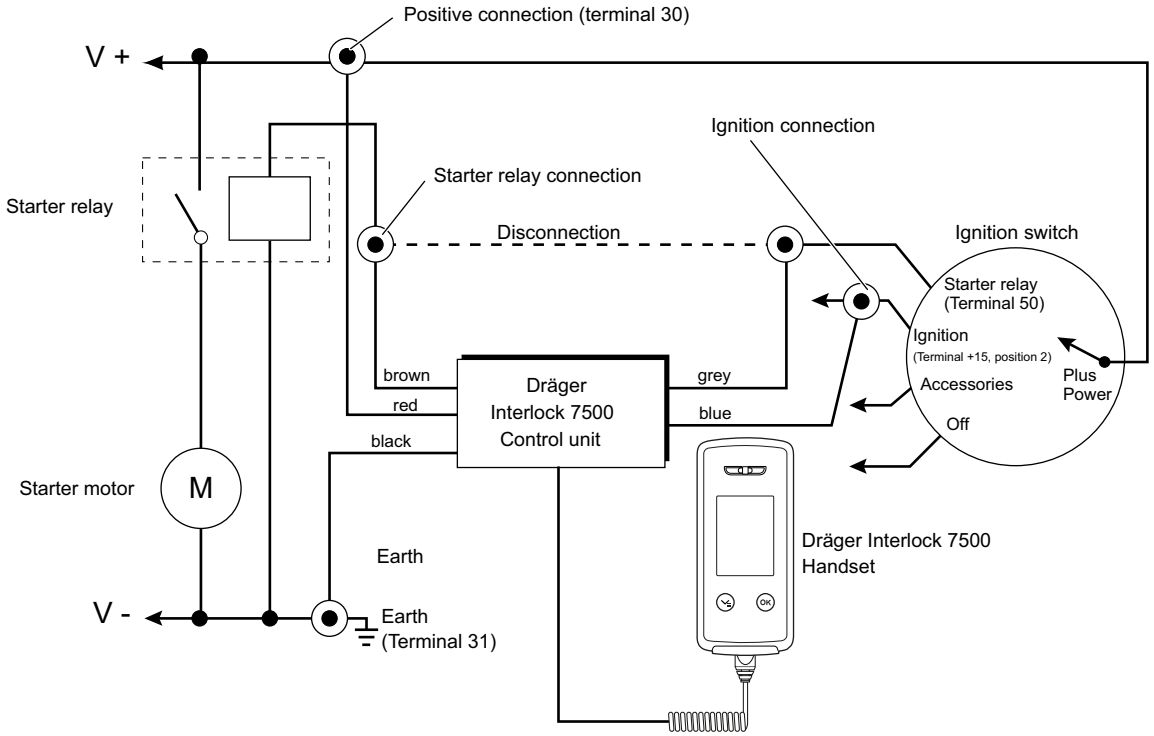
ℹ The required Terminal 15 must be a constant, continuous positive voltage without run-on.

4.4.2 Disconnecting the vehicle battery

- Disconnect battery earth lead before further work.

ℹ Disconnecting the vehicle battery may erase battery-dependent device settings (e.g. the theft code for the radio or the preset stations). On some vehicles, disconnecting the vehicle battery may turn the airbag light on, which can then only be turned off by the vehicle manufacturer.

4.4.3 Example of circuit diagram (here with key switch and starter relay)



4.4.4 Connecting the earth lead

⚠ CAUTION

Fire hazard!

► A clean and reliable connection between the leads must be ensured!

1. Prepare earth lead of the control unit (black) for connection with vehicle earth.
2. Connect earth lead using a self-tapping screw, e.g., to the vehicle chassis, or join to another earth wire in the cable harness – for example, with cable connectors.

4.4.5 Connecting the start clearance lead

ℹ Do not trim the wires of the vehicle so that they can be used again after deinstallation of the control unit.

1. Cut the lead for the floating switching output for clearance to start (e.g., starter relay).
2. Connect earth lead using a self-tapping screw, e.g., to the vehicle chassis, or join to another earth wire in the cable harness – for example, with cable connectors.
3. Push Dräger thermo-shrinkable tubing over the joint and shrink by heat application.

   ℹ The Dräger thermo-shrinkable tubing means that any future change or manipulation of the joint can be detected.

4.4.6 Connecting Terminal 15

The instrument must be connected to an ignition lead of the ignition switch that remains live when the vehicle is started up ("START" position of the ignition switch) and when the ignition is switched on ("IGNITION" position of the ignition switch).

1. Cut ignition lead in the ignition-switch cable harness ensuring adequate cable has been left for termination on the ignition lead (blue) on the control unit.
2. Trim, as necessary, ignition lead on the control unit (blue).
3. Place Dräger thermo-shrinkable tubing on the ignition lead.
4. Join the control unit ignition cable (blue) to the two separated ends of the cable harness ignition wire to ensure reliable contact.
5. Push Dräger thermo-shrinkable tubing over the joint and shrink by heat application.

   ℹ The Dräger thermo-shrinkable tubing means that any future change or manipulation of the joint can be detected.

4.4.7 Connecting the positive supply lead

ℹ Some vehicles have positive wires whose current is switched off some time after the vehicle is locked. Always use a positive wire which is constantly under voltage, as otherwise the buffer battery in the control unit will be drained.

1. Choose a suitable connection position in the positive supply lead (Terminal 30) of the ignition-switch cable harness, ensuring adequate cable has been left for termination of the positive supply lead (red) on the control unit.
2. Connect the positive lead from the ignition switch cable harness to the positive connecting cable on the control unit (red) to ensure correct contact.

4.4.8 Connecting the D+ lead

On vehicles with a multi-stage ignition switch and a voltage of 12 V at Position 1 after the engine is switched off:

⚠ CAUTION

Risk of damage to the device!

► If "Start recognition type 3 (alternator)" is selected, connect the AUX 3 input (PIN 16) of the control unit to the output of the alternator (D+ lead).

- Additionally, select the "Start recognition type 3 (alternator)" option for recognition of movement or acceleration. Otherwise, Interlock cannot reliably detect the switching off of the engine and it remains in the "Safe journey!" status.

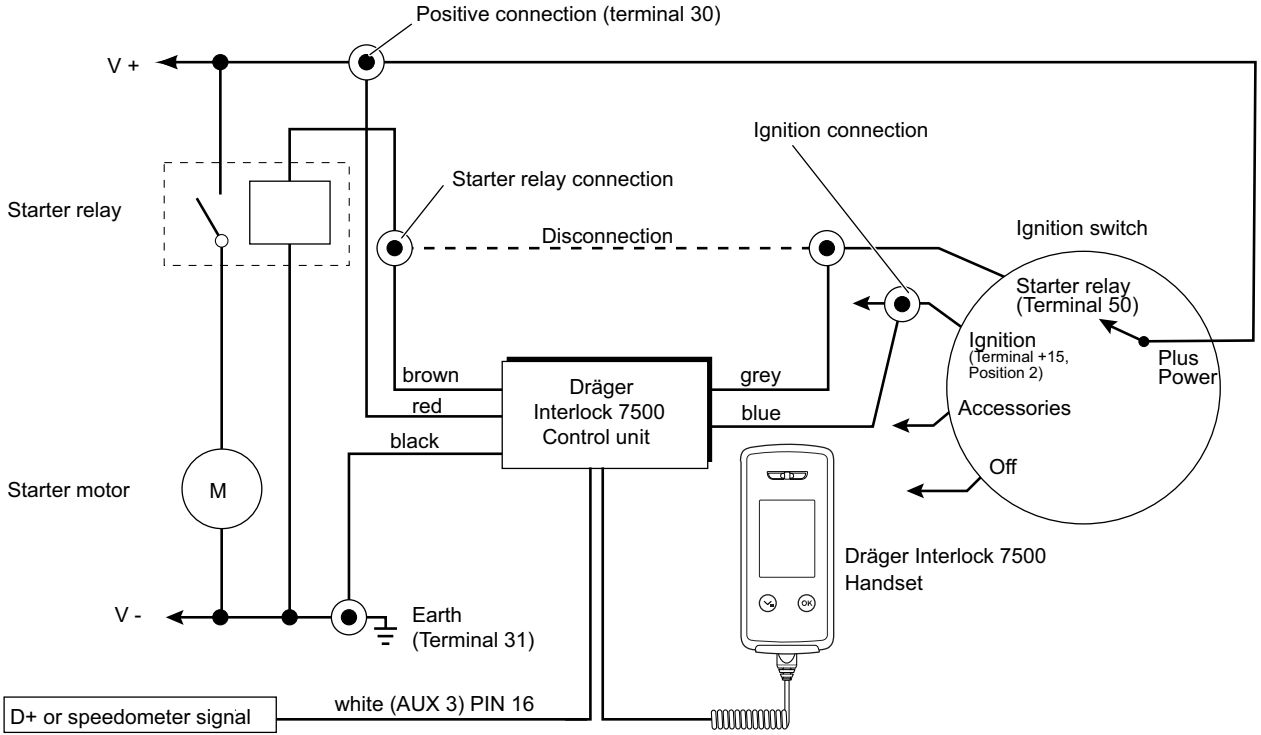
✓ After a successfully passed breath sample, the device goes into the free start time and after the engine starts, attains the "Safe journey!" status. After the engine is switched off, the device reverts to the free start time.
If the device does not switch to the free start time after the engine is switched off, the D+ lead is either not connected or has not been properly connected.

4.4.9 Connecting the speedometer signal

Alternatively instead of the alternator D+ output, the digital speedometer signal on Pin 16 can also be connected if this provides a frequency between 1 and 500 Hz proportional to the driven speed.

- Select the threshold of a vehicle movement from a speed of approx. 3 km/h. Request the conversion factor from the vehicle manufacturer.

4.4.10 Circuit diagram with D+ lead or speedometer signal

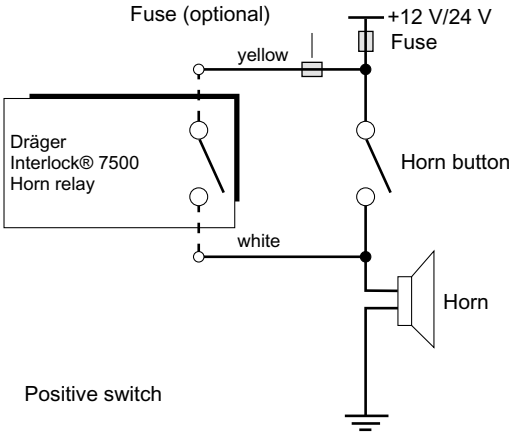


4.5 Connecting the horn and headlights

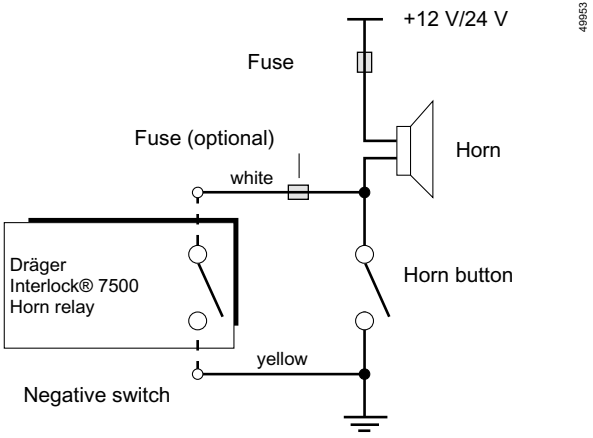
Special regulations may require the device to be connected to the horn and/or the headlights. If this is the case:

1. Determine the activation method for the horn and/or headlights: +12 V/24 V or earth.
2. Locate suitable connection positions and connect the horn to the horn relay of the device according to the connection diagram (connections 3 (see "Description of the connection leads on the control unit", page 20)), or connect the headlights in the same way to the headlight relay on the device (connections 2 (see "Safety-related information", page 18)).
3. If the location of the vehicle fuse is not known, fit an additional fuse in the supply line of the device.

Connection alternative A



Connection alternative B



4.6 Connecting the external indicator light

In special cases (for example with restricted aural capability) it may be necessary to install an external indicator light in the area directly visible to the driver.

1. Locate suitable mounting position directly visible to the driver but not hindering the driver (for example on top of the cover of the steering column or above the instrument panel).
2. Mount indicator lights and connect to the device (connections 12 LED+ and 13 LED- (see "Description of the connection leads on the control unit", page 20)).

4.7 Connecting the door contact

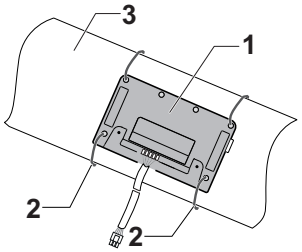
It is possible (optional) to install the device in such a way that it is activated by opening the door lock or the door alone. This reduces the waiting time for the driver until the device is ready for operation and for the driver to provide a breath alcohol test.

- Connect the white cable on the device (connection 15, (see "Description of the connection leads on the control unit", page 20)) to a lead on the vehicle that is connected to 12 V when the door opens, for example via the interior light.

4.8 Fixing the components

4.8.1 Control unit

1. Secure the control unit with cable ties onto a support (such as the steering column). Thread the cable ties through the tabs of the control unit and secure onto the support or wrap the cable ties around both the support and the steering column.



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Example:

1	Control unit
2	Cable ties
3	Steering column

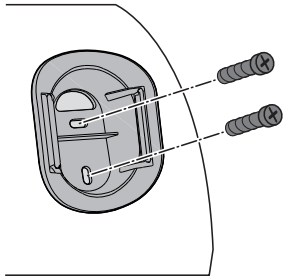
2. Secure cables from the control unit; where possible, lay cables out of sight.
3. Plug in spiral connection cord for handset into the control unit.
4. Re-fit covers on the steering column.

4.8.2 Handset

To mount the handset in the vehicle, use the dedicated holster.

⚠ WARNING
Do not install holster for the handset in front of air-bags.

- Decide upon mounting location ensuring minimal obstruction by the handset and easy accessibility for the driver.
- Fix holster with screws. Ensure adequate clearance behind fixing screws so that they can be screwed in far enough.



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4.9 Functional test

NOTICE
After installation, reconnect the vehicle battery.
Test the function of the device in line with the instructions for use.

1. The Interlock wakes up when the ignition is switched on (Connection 15) or via a digital input (e.g. vehicle interior lighting switched on/vehicle unlocked).
2. The display message on the handset shows: ***Ready for test. Please blow***.
3. The vehicle **must not** be started now.

4. No permanent error messages in the display cockpit of the vehicle.
5. Provide a breath sample.
6. The display message on the handset shows: ***Test passed*** followed by the ***Free Start Time:***.
7. The vehicle can now be started.
8. The display message on the handset shows: ***Drive Safely!***.
9. If the vehicle is an automatic, the Interlock **must not** switch to the free start time during the stop phase.
10. If a retest is requested, the engine **must not** switch off.
11. Switching off the ignition/exiting the vehicle (with Keyless Go).
12. Interlock immediately switches to the free start time.
13. The engine may be started again without providing another breath sample within the free start time. The Interlock then changes back from ***Free Start Time:*** mode to ***Drive Safely!*** mode.
14. If the engine is not switched on again, the Interlock switches off automatically once the free start time has expired.
15. The engine can be switched on again after expiry of the free start time once a successful breath sample has been provided.

4.10 Installation certificate

- After installation, complete the installation certificate contained in the instructions for use.

4.11 Instrument setting and calibration

This work may only be carried out by an authorized Dräger-Interlock service centre.

- If required, set the variable device settings on the device.
- Calibrate the device, if necessary.

4.12 Removing the Interlock

4.12.1 Disconnecting the vehicle battery

NOTICE

Disconnecting the vehicle battery may erase battery-dependent instrument settings (e.g., the anti-theft code for the radio or the preset stations). On some vehicles, disconnecting the vehicle battery may turn the air-bag light on, which can then only be turned off by the vehicle manufacturer.

- Disconnect the earth lead from the vehicle battery before doing any work.

4.12.2 Detaching the connecting leads

1. Detach the positive lead (red), earth lead (black), ignition lead (blue) and the door contact lead (white) for the control unit from the cable harness of the vehicle.
2. If required, also disconnect the control unit's horn, headlights and D+ lines from the vehicle's cable harness.
3. Protect open leads of the cable harness against short circuit and corrosion with high-quality insulating tape or thermo shrinkable tubing.
4. Disconnect the control unit's starter relay lines (grey and brown) from the vehicle's cable harness and join the two starter relay lines of the cable harness via soldering.
5. Protect the connection against short-circuit and corrosion, e.g. using a thermo-shrinkable tubing.
6. After removing the device, re-connect the vehicle battery.

5 Disposal

Dispose of the product in accordance with the applicable rules and regulations.

This product must not be disposed of as household waste. This is indicated by the adjacent symbol.
You can return this product to Dräger free of charge. For information please contact the national marketing organizations or Dräger.

6 Technical data

Measuring principle	Electrochemical DrägerSensor
Measuring range	up to 3.0 mg/L
Ambient conditions	
for operation and storage	-40 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
Visual 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	
Handset	Approx. 240 g
Control unit	Approx. 240 g
Power supply	12 to 24 V
Power consumption	
maximum	<2.5 A
stand-by	<1 mA
Switch relay for the lead for the starter relay	
continuous	<16 A
peak	<40 A
Output relay	
switchable de-energized	48 V
switchable energized	24 V
Ignition lead	5 V to 48 V
Wait time to be ready for measurement	
20 °C	2 s
0 °C	<5 s
-25 °C	<60 s
-40 °C	<110 s

7 Order list

Name and description	Order no.
Mouthpieces (5 pcs), individually packaged	83 26 550
Mouthpieces (50 pcs), individually packaged	83 27 627
Mouthpieces (300 pcs), individually packaged	83 22 597
LTE module	83 27 080
Cable set for connecting headlights	37 01 238
Cable set for connecting horn	37 01 237
Cable set for connecting external equipment (AUX/OUT)	37 01 239
Holster for handset	83 22 497
Holster V for handset	37 24 354
Spiral cord, length 1.5 m	83 15 909
Spiral cord, length 5.5 m	83 20 248