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Installation Guide

2. Symbols used in the Installation Guide



denotes instructions which are important for your safety and the safety of others.



denotes instructions which are important for the installation and function of the unit.

3. Safety and Installation Instructions



The OnlinePro should only be installed by trained personnel.

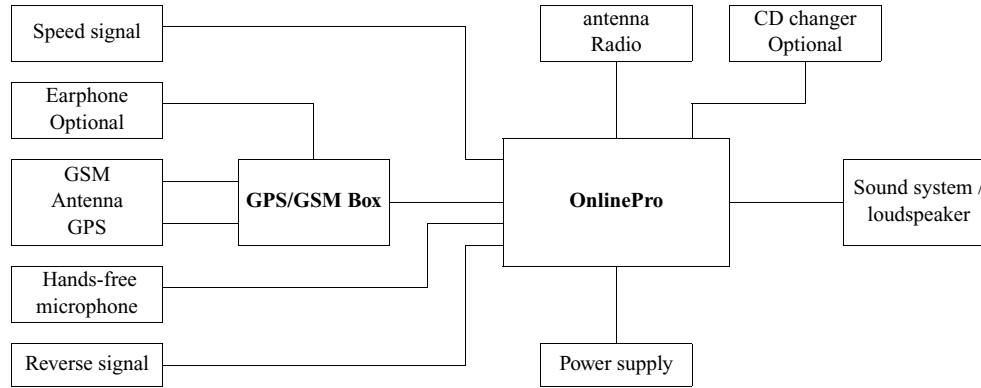
- Disconnect the vehicle battery before installation of the unit.



Note the safety instructions of the vehicle manufacturer (airbags, immobilisers etc.).

- Ensure that leads are installed in such a manner that they cannot be pinched, bent or pulled out.
- Before installation, park the vehicle in a safe and level place and remove the ignition key.
- If using branch connections, it is important to note the relevant cable section.

4. Connection schematic for the OnlinePro



Note: Connection options are described in detail on page 57.

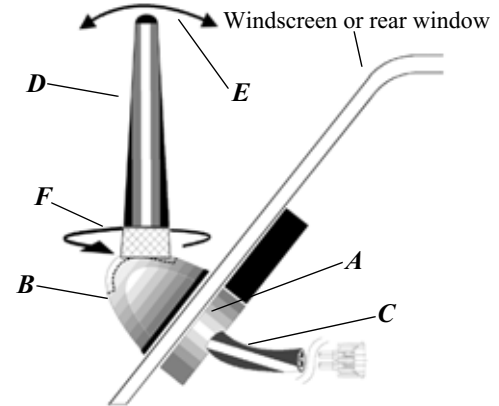
Installation Guide

5. Installation of the GPS/GSM antenna

The antenna delivered with the system is a two-piece combination GSM/GPS antenna. The combination GSM/GPS antenna is a glass-adhesive antenna; i.e. no leads must be run from the outside to the vehicle interior.

The GSM/GPS combination antenna consists of an internal unit *A* and an external unit *B*. To ensure correct function, the two units must be installed as described below: Attached to the internal unit *A* is a 3-metre long cable *C* with the combined GSM/GPS plugs. The connecting cable is connected to the GSM/GPS Box with the GSM/GPS plugs. If more than 3 metres of cable are required, the cable can be extended with the optionally available extension cable (Stock No. 1380311). The antenna *D* can be loosened *F* to adjust the angle *E* by twisting the antenna. After loosening and adjusting, the antenna *D* must be screwed on hand-tight.

- ☞ The angle of the antenna to the vehicle has an influence on the antenna's transmission and reception. If reception is still unsatisfactory after installation, the angle of the antenna to the vehicle can be adjusted to optimise reception. In most cases, best results are achieved with the antenna in a vertical position.



Installation of the GSM/GPS Antenna

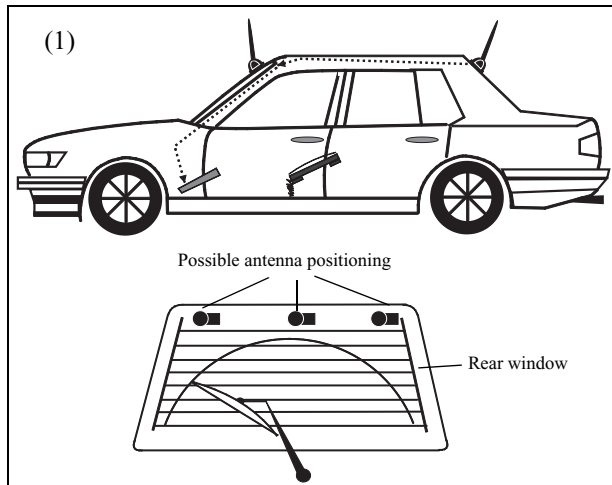


The antenna is to be affixed in such a manner that it cannot detach in the event of a collision or sudden braking.



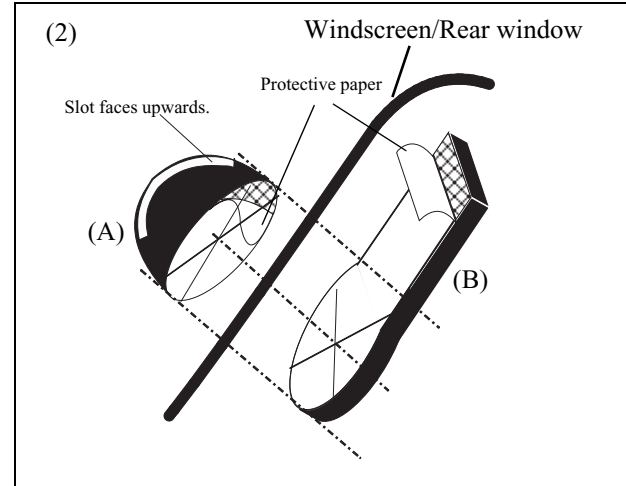
The antenna can only be installed under a non-metallised windscreen or rear window.

The installation of the GSM/GPS antenna on sharply angled windows (i.e. side windows or rear window in estate cars/ stations wagons) is not recommended as satisfactory GPS reception cannot be ensured.



Installation Guide

- a. Determine installation position (1) (rear window, windscreen)



- ☞ The antenna must not be affixed over the heating wires of heated windscreens or rear windows. Windows with metal layered plastic window tinting are not suitable. Take the windscreen-wiper range into account when positioning the antenna. The glass surface to which the antenna must adhere, may be slightly curved. When selecting position for installation, please bear in mind the possibility of cable extension.



The driver's field of vision must not be obstructed.



Clean adhesion surfaces (inside and outside) with the enclosed cleaning cloth.
After cleaning, wait until the cleaned surfaces have dried.

- b. Completely pull off protective paper from the adhesive surface (the square piece as well) (2). Caution: The adhesive part is now exposed.

First adhere the external unit (A) with the slot at the top to the glass by firmly pressing (approx. 3-5 seconds) around the circumference of the external unit base.

Subsequently, affix internal unit (B) to the inside of the window, once again by pressing on the housing of the unit for approx. 3-5 seconds, with the circular area centred in the middle of the outside unit (centre point = centring axis).

Depending upon the amount of space, the position of the internal unit can be turned on this centring axis before being directly affixed.



The ideal adhesion temperature is between +15 °C and +25 °C.

The adhesive foil will adhere immediately to the adhesion surface and cannot be repositioned. It is not possible to reuse the adhesive foil.

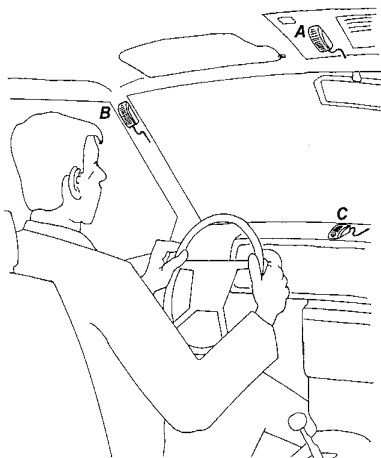
- c. Run connecting cable to the installation position of the GSM/GPS Box.

Installation Guide

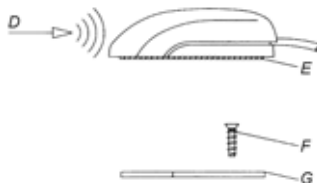
6. Installation of the hands-free microphone

The hands-free microphone should be placed in the vehicle to allow optimal recognition of the speaker's voice. Possible positions in the vehicle for the microphone can be seen in the following diagram.

- ☞ The installation position should be as far away from the loudspeakers as possible. If problems occur, different positions should be tested. In order to pick up as little background noise as possible, the microphone has a narrow pick-up angle and must consequently be directed towards the driver.



- A*: Optimal installation position
- B*: Alternative installation position
- C*: Less suitable installation position
- D*: Speaking direction on microphone
- E*: Adhesive strip for affixing to smooth surfaces
- F*: Screw for fastening the screw-on plate
- G*: Screw-on plate for affixing to rough or uneven surfaces.



Affixing the hands-free microphone to a flat and smooth surface can be accomplished with the adhesive strip *E* (Clean adhesion surfaces). If the microphone is to be affixed to a rough or uneven surface, the screw-on plate *G* should be affixed first with the screw *F* (To avoid risk of damage, please pay attention to screw length). Subsequently, affix the microphone to the screw-on plate *G* with the adhesive strip *E*. The connection of the hands-free microphones takes place in socket *C* of the OnlinePro.

 Install the lead in such a manner that it cannot be pinched, bent or pulled out.


Connection of the hands-free microphone to the OnlinePro

a. Connection without CD changer

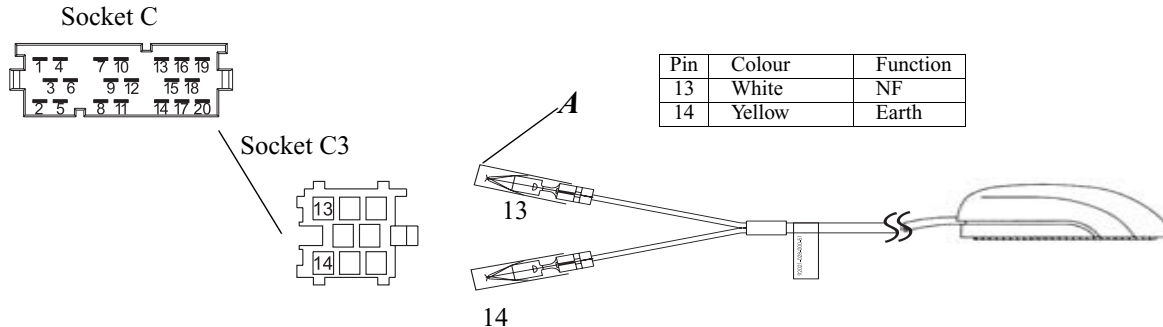
For connection of the hands-free microphone to an OnlinePro **without CD changer**, the enclosed blue socket must be connected as described below. Before connection, remove protective cap *A* from both contacts.

b. Connection with CD changer

For connection of the hands-free microphone to an OnlinePro **with CD changer**, the enclosed blue socket must be connected with the two leads as described below. Before connection, remove protective cap *A* from both contacts.

 Once the contacts are inserted into the blue plug housing, a special tool is required to remove them.

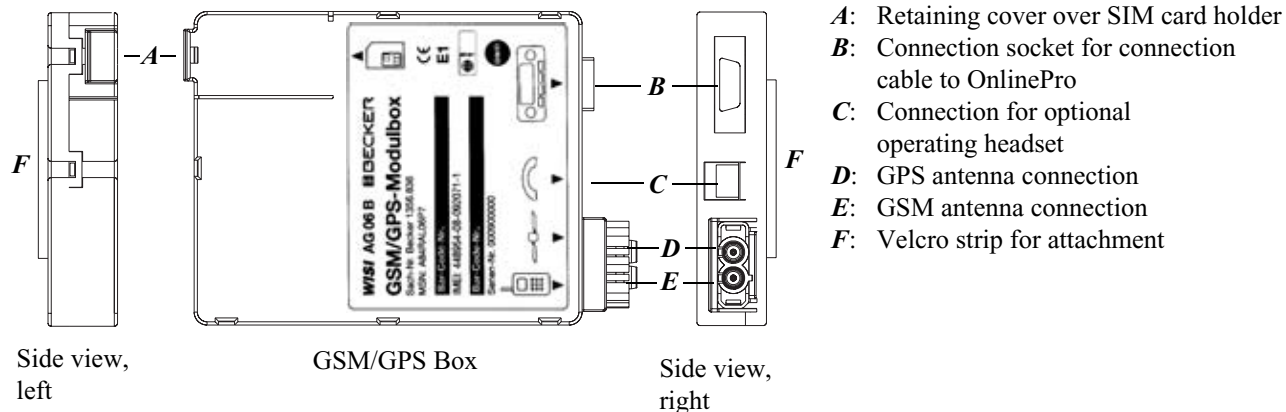
Connection of the blue plug housing



Installation Guide

7. Installation of the GSM/GPS Box

The connectors for the combination GSM/GPS antenna, the optional operating headset and connecting cable to the OnlinePro are to be connected to the GSM/GPS Box. The SIM card necessary for activation and operation of the telephone must be inserted into the card-holding slot.



The GSM/GPS Box can be installed in the glove compartment, for example. However, an installation position allowing a maximum possible distance from the Online Pro should be selected.

On the housing of the GSM/GPS Box, there are two Velcro strips *F* for attachment.



Install the lead in such a manner that it cannot be pinched, bent or pulled out.

The GSM/GPS Box should be installed in such a way that the SIM card inserted into the SIM card holder can be taken out without having to remove the GSM/GPS Box.

Inserting the SIM card

In order to insert the SIM card received from your network operator/provider, the retaining cover *A* must be opened. If the SIM card was delivered in "credit card" format, please detach the small section of the card.

The SIM card holder is found under the retaining cover *A*.


Push the top side of the SIM card holder in the direction of the arrow.

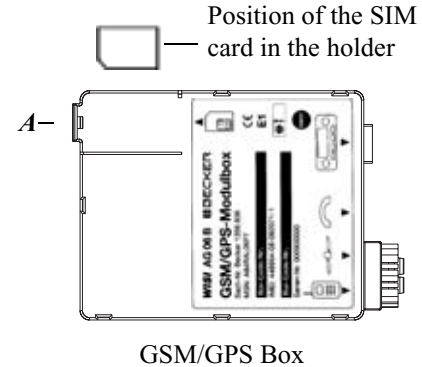
Now lift up on the released SIM card insertion slot.

Slide the SIM card with the connectors into the raised SIM card insertion slot. The slanted corner of the SIM card must face toward the edge of the housing.

Subsequently, press the SIM card insertion slot back down and push in the opposite direction of the arrow.

Close the retaining cover *A*.

 Older SIM cards (5 Volt technology) cannot be used.
Please consult your network provider.



Installation Guide

Connecting the leads

- Insert the connecting cable into socket **B** of the GSM/GPS Box and connect the other end of the cable to the appropriate connection on the OnlinePro.
- Connect the additional earth lead to the lug intended for this purpose on the Online Pro
- Connect the GSM/GPS antenna plugs to the sockets **D** and **E** on the GSM/GPS Box.
- Connect the optional telephone handset (if available) to socket **C** of the GSM/GPS Box.



Additional earth lead



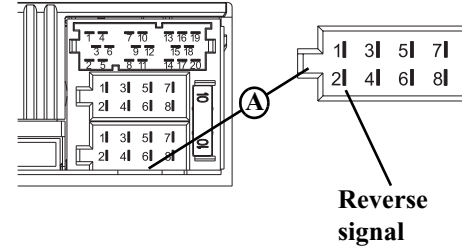
8. Connection of the reverse signal

If the switch on the gearbox or shift linkage is accessible:

- Connect a separate lead to the activated contact.
Connect lead to socket A, pin 2.
- **Low - level = earth, high - level 12 V - 16 V**

If the switch is not accessible:

- Check which lead is routed to the reversing lamp. Then, if necessary, remove the inner cover for the reversing light.
Connect a separate lead to the active lead of the reversing lamp and connect with socket A, pin 2.



9. Connection of the speed signal (GAL) from the speedometer/ tachometer

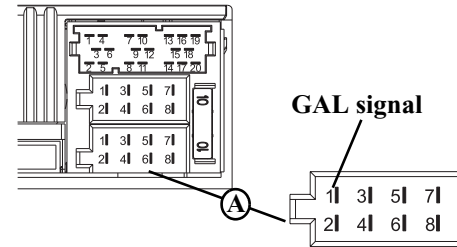
Electronic speedometer

- Remove the signal from the speedometer, extend and connect to socket A pin 1.

☞ Depending on the vehicle equipment, the lead for the GAL signal is usually connected to the DIN - ISO plug of the car radio. The assignment of the DIN - ISO plug may vary depending on the vehicle type.

- Minimum requirement for the signal:
0.5 Hz - 4 kHz / Square wave signal
Low level < 0.3 V, High level 5 V - 16 V


☞ If you do not know the exact installation position / location of the speed signal, please consult the vehicle manufacturer.

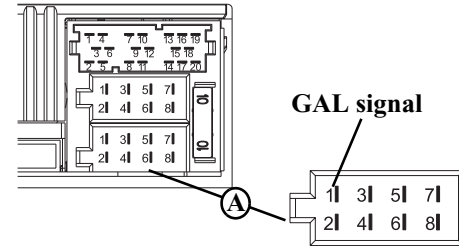


Installation Guide

Mechanical speedometer with built-in speed sensor in the speedometer cable

- Remove the signal from the speed sensor, extend and connect to socket A pin 1.
- Minimum requirement for the signal:
0.5 Hz - 4 kHz / square wave signal
Low level < 0.3 V, High level 5 V - 16 V


 If you do not know the exact installation position / location of the speed signal, please consult the vehicle manufacturer.

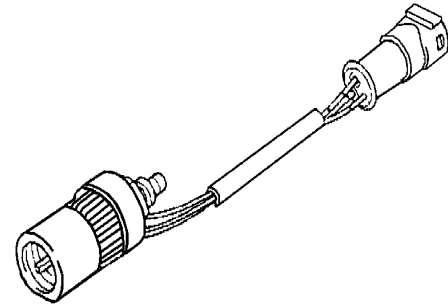


Mechanical speedometer without speed sensor in the speedometer cable

A speed sensor must be built into the speedometer cable to generate a digital signal.

The VDO Adapter 2152.30300000 or a vehicle-specific adapter that fulfils the minimum requirements can be used. The VDO speed sensor is suitable for direct installation on the gearbox (no further installation parts required) or in the speedometer cable (in conjunction with additional universal installation parts).

 If the sealed speedometer cable is released, a correct display cannot be guaranteed. Incorrect installation leads to improper functioning of the navigation system or of the speedometer.



Installing the speed sensor directly on the gearbox

- Release the speedometer cable and screw speed sensor onto gearbox. Screw released speedometer cable onto the speed sensor and connect the wires.

Cable connections for the speed sensor

- Brown - earth (terminal 31)
- Black - power supply (terminal 15), 9 - 16V, 30 mA
- Blue/red - signal for socket A pin 1

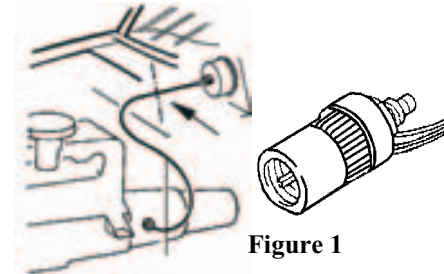
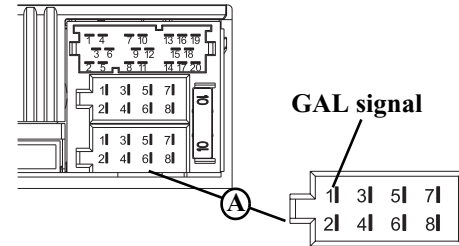
Installing the speed sensor in the speedometer cable

In order to install the speed sensor, the speedometer drive cable must be cut at a straight section, in which the speed sensor is then inserted. When removing the speedometer cable from the vehicle, ensure that the location of the straight-routed section is determined and marked accordingly.

Installation is illustrated without reference to any specific vehicle. In addition to the sensor, the following VDO universal parts are required:

1 x connecting piece	1040 1300 025	(VDO part number)
2 x knurled nuts	1040 1000 003	(VDO part number)
2 x hose sleeves	1040 1000 031	(VDO part number)
2 x dogs	1040 1000 049	(VDO part number)
2 x friction washers	1040 0900 003	(VDO part number)
2 x fuel washers 4.0	KN07.0570.18	(VDO part number)
2 x washers	KN11.1904.122	(VDO part number)

A complete set can also be ordered from VDO (Part number X 39397106191).



Installation Guide

Recommended tools: Cable installation tool for speedometer cables
from VDO, Order No: 1999.10.13.000.110

If you require vehicle-specific parts, please consult the vehicle
manufacturer or your nearest VDO branch.

- Using a metal saw, cut into the cable approx. 1 mm at a right angle
to the profile and break off (Figure 3).

- Then cut the cable in the centre with side-cutting pliers
(Figure 4).

☞ For protective hoses with wire netting, the hose and flex
cable can be cut directly with the side-cutting pliers.

- Shorten the protective hose again at both ends up to the plastic
sheathing. Check whether the ends of the flex cable still engage in
the speedometer and the gearbox.

- Shorten the inner cable to a projection of 13 mm (Figure 5).

- Connect the union nut and hose sleeve (Figure 6) and push onto the
hose ends (Figure 7).

- Connect friction washer to dog (Figure 8).

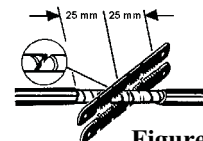


Figure 3

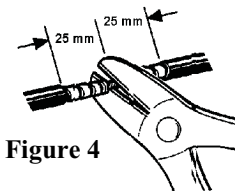


Figure 4

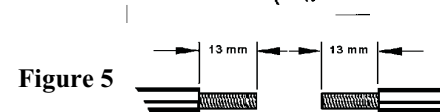


Figure 5



Figure 6



Figure 7

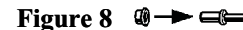


Figure 8

- Remove grease from flex cable and connect dog to flex cable.
Using a suitable installation tool, press the dog onto the flex cable (Figure 9).

☞ When pressing in, ensure that the dog is securely positioned and that it runs smoothly.

- Pull the hose sleeve and nut as far as possible in the direction of the dog, to achieve approx. 1-2 mm play (Figure 10).
Slightly squeeze the hose sleeve with pliers. Wrap with isolating tape to secure (Figure 11).

- Screw the connecting piece and the speed sensor into the cable (Figure 12).

- Electrically connect the speed sensor using the extension cable from VDO (part number: 2152.90 30 0100).

Wire connections for the speed sensor

- Brown - earth (terminal 31)
- Black - power supply (terminal 15), 9 - 16V, 30 mA
- Blue/red - signal for socket A pin 1



Figure 9

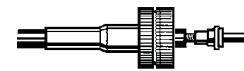


Figure 10

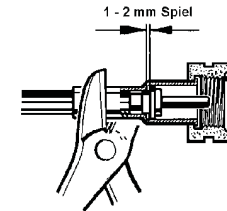
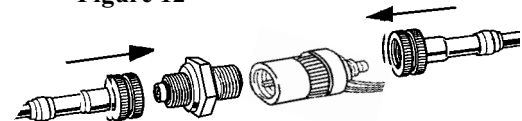


Figure 11

Figure 12



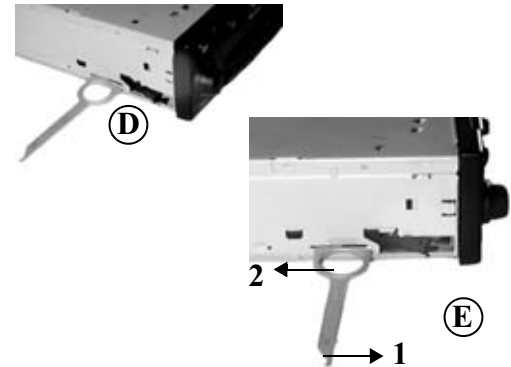
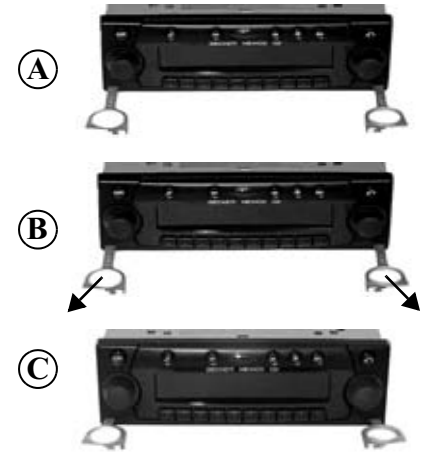
Installation Guide

10. Installation/ Removal of the OnlinePro

- **Installation:**
With this radio, a universal mounting for DIN installation slots is integrated. An installation frame is not required. The unit is inserted into the installation slot and secured with the slides supplied. To install, complete all electrical connections. Then push the unit into the installation slot. Subsequently, insert slides into the openings on the front of the unit until the first detent position (Fig. A). Now lock the radio in by pulling on both slides as shown in Fig. B. Subsequently, remove the slides.

☞ The installation angle of the unit must not exceed $0^\circ - 35^\circ$ (vertical).

- **Removal:**
To remove the unit, it must first be unlocked. For this purpose, push in both slides to the second detent position, as shown in Figure A. Subsequently, withdraw the unit with both slides. (Fig. C). Then remove the slides by pressing the springs on the right and left sides of the unit.
If the unit was installed previously in another vehicle, it may be necessary to adjust the springs on the unit before installation. To adjust the springs, insert slide as shown in Fig. D and subsequently adjust as shown in Fig. E (Gently press slide in the direction of 1 while at the same time moving the slide in the direction of 2).

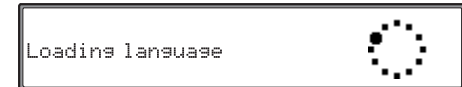
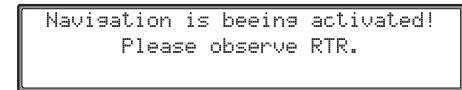


11. Initial operation

- Connect the battery.
- Switch on the vehicle ignition for commissioning. Switch on the OnlinePro.
Enter code (see the operation guide for a detailed description).
- Insert the Navigation CD to install the software for the navigation system.
- After successful installation of the navigation software, press the **F** key. The next display appears. The language selection is then requested.
- With the right rotary control **●**, select language. The language selection is accepted by pressing the control and the language is installed.

With some languages, a selection can be made between male and female voices.


With the right rotary control **●**, select voice. The voice is accepted and installed by pressing the control.





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12. Calibration


- After voice installation, you will have to wait for GPS reception before beginning the calibration journey. During this reception check, the vehicle **must** be in an open area and the GPS antenna must have as clear a view as possible in all directions. It may take a few minutes until adequate GPS reception is available. The next display appears during this period. A calibration journey is requested when sufficient GPS reception is available.

 In order to minimise the waiting period for sufficient GPS reception, the vehicle should not be moved during this time. The unit must be switched on.

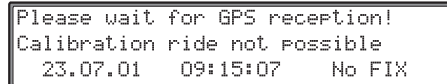
Before beginning the calibration journey, the sensors tests described in "Service Mode" on page 52 must be performed.

To call up the Service Mode, press and hold the multifunction button . Now press the multifunction buttons . The Service Mode will be called up.

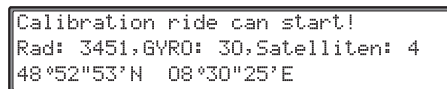
After successful completion of the tests, the calibration journey can begin.

Exit the Service Mode by pressing the  key.

After commissioning, a calibration journey is required. During this journey, the speedometer signal (GAL) is adapted to the vehicle-specific data, and the gyro-sensor to the unit installation position.



```
Please wait for GPS reception!  
Calibration ride not possible  
23.07.01 09:15:07 No FIX
```



```
Calibration ride can start!  
Rad: 3451.GYRO: 30.Satelliten: 4  
48°52'53"N 08°30'25"E
```





```
Version  
GPS info  
Calibration
```

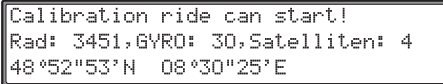


The distance to be covered depends on the type of vehicle and the local conditions.

- The navigation system is only ready for operation on completion of the calibration journey. The main navigation menu is displayed. Final precision is only achieved after a further journey.
- The calibration journey should not take place on a motorway, but should include as many turns as possible. The next display appears during the calibration journey.
If calibration is satisfactory, the Main Navigation Menu is displayed and the unit is ready for operation. Final precision is only achieved after a further journey.

 If the unit is switched off during the calibration ride, language installation is requested when the unit is switched on again. Re-installation can be skipped by pressing the  key.

- For correct navigation on routes with time-dependent traffic guidance, the time should be correctly set as described under "System settings" in the operation guide.



Calibration ride can start!
Rad: 3451, GYRO: 30, Satelliten: 4
48°52'53"N 08°30'25"E



Destination
Dest. memory   5

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13. Service Mode

- Switch on unit (see Operating Instructions)
Enter code (see operation guide).
- If the unit has already been calibrated, select the Main Navigation Menu by pressing the **F** key.
- By pressing the key **F** once again, you access the System Settings.
- Press and hold the multifunction buttons **3**. Now press and hold the multifunction buttons **5**. This calls up the Service Mode.


The following functions can be selected in the Service Mode:


- Calibration ride - Calibration Journey Display
- GPS info - Test of GPS Function
- Calibration - Function to delete the calibration or to enter a new calibration
- Sensory analysis - Sensor Function Test
- Version - The version number of the navigation CD is displayed
- Demo - Setting of the Demo mode
- Route mode - Starting the Route-mode function

By turning the right rotary control **⦿**, select the desired entry (uppercase letters) and press to confirm.




Function control of the GAL signal, Reverse signal, unit-internal sensors (Sensory analysis)


- In the Service Mode, select `Sensory analysis` with the right rotary control  and press to confirm.
- Move the vehicle several metres forwards or backwards for the GAL signal function test.


-  The number value behind `Rad#` must increase (also at low speed).
The number value behind `Rad#` should not increase when the vehicle is in neutral or when the accelerator is pressed while the vehicle is parked.

- Engage the reverse gear for the reverse signal function test.

-  The number value behind `Backwards#` must jump from 0 to 1 (1 to 0).

- Drive round a bend to test the function of the internal sensors.

-  The value behind `Gyro#` must change.

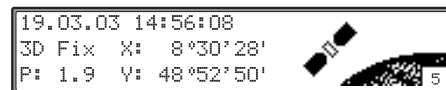
- To exit the Sensor Test, press the right rotary control . The unit switches back to the Service Mode.



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Function control of the GPS antenna (GPS info)


- In the Service Mode, select GPS info with the right rotary control ● and press to confirm.
 - When functionality and GPS reception are working correctly, the number of satellites received (i.e. 5), date and time (i.e. 19.03.03 14:56:08) and the type of positioning currently possible (i.e. 3D Fix) are displayed.
- ☞ For successful and fast calibration, a minimum of 3D Fix is required. A certain amount of time may be required to reach this value (do not move the vehicle during this period).
- To exit the GPS Test, press the right rotary control ●. The unit switches back to the Service Mode.




Delete calibration (Calibration)

If the navigation system is removed from one vehicle and installed in another, the calibration must be performed again. However, to do so, the current calibration data must be deleted.

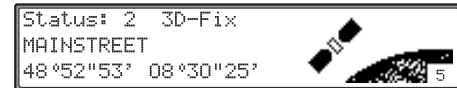
In the Service Mode, select **Calibration** with the right rotary control  and press to confirm.

With the right rotary control, select  **Delete** and press to confirm. The calibration is deleted and the unit returns to the Service Mode.

Status of the calibration journey (Calibration ride)

In the Service Mode, select **Calibration ride** with the right rotary control  and press to confirm.





The calibration status (i.e. **Status: 2**) and the type of positioning (i.e. **3D**) are displayed. After calibration is completed, instead of **Rad** and **Backwards**, the street currently being driven on is displayed (provided it is included in the digital map).



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Demo Mode (Demo)

The Demo Mode is intended for demonstration purposes. A fixed location is given to the unit (Hamburg Werderstraße).




- In the Service Mode, select **Demo** with the right rotary control  and press to confirm.
By turning the right rotary control , select either **Yes** or **No**. By selecting **Yes** and pressing the right rotary control , the Demo Mode is activated.
- You can now enter a destination as described in the operation guide.
- To exit the Demo Mode, select **No** with the right rotary control  and press to confirm.



Route Mode (Route mode)

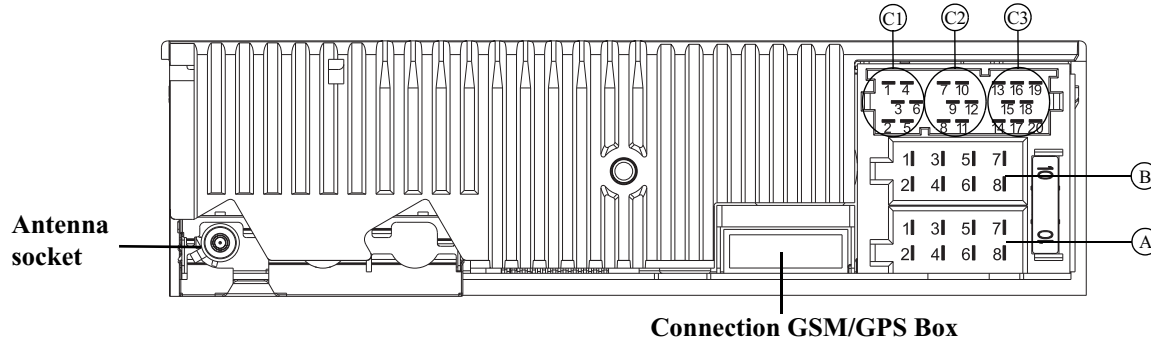
The Route Mode can be used for demonstration purposes, like the Demo Mode. After starting, routes are calculated for all the destinations stored in the unit's destination memory.

The demo mode must also be activated.

- In Service Mode, select **Route mode** with the right rotary control  and press to confirm.
- By turning the right rotary control , select either **Yes** or **No**. By selecting **Yes** and then pressing the right rotary control , the Route Mode is activated.
- To end the Route Mode, route guidance must be terminated, as described in the operating guide.



14. Connections



Socket A

- 1 Speed signal (GAL)
- 2 Reversing lamp signal
- 3 Telephone mute / clearing function
- 4 Permanent positive (terminal 30)
- 5 Control output for automatic antenna/amplifier
- 6 Illumination (terminal 58)
- 7 Switched positive (terminal 15)
- 8 Earth (terminal 31)

Socket B

- 1 Loudspeaker rear right +
- 2 Loudspeaker rear right -
- 3 Loudspeaker front right +
- 4 Loudspeaker front right -
- 5 Loudspeaker front left +
- 6 Loudspeaker front left -
- 7 Loudspeaker rear left +
- 8 Loudspeaker rear left -

Socket C1

- 1 LineOut rear left
- 2 LineOut rear right
- 3 AF earth
- 4 LineOut front left
- 5 LineOut front right
- 6 Subwoofer LineOut

Socket C2

- 7-12 Special connection for Becker CD changer

Socket C3

- 13 NF - Hands-free microphone
- 14 Earth - Hands-free microphone
- 15-17 Special connection for Becker CD changer
- 18 CD AF earth (AUX)
- 19 CD AF left (AUX)
- 20 CD AF right (AUX)

Warning: Terminal 30 (permanent positive – socket A pin 4) and Terminal 15 (switched positive – socket A pin 7) must always be connected separately, otherwise increased power consumption will occur when the unit is switched off. Connection socket A is not the same for all vehicle types. Therefore, always measure voltages before installation.

15. Troubleshooting

Troubleshooting for GPS antennas and faulty installation

Fault: Permanent or temporary interference with GPS reception, faulty determination of current position, unit cannot be calibrated.

The navigation system calculates the current position from the data received by the integrated GPS satellite receiver. Perfect GPS reception is very important for the proper functioning of the navigation system. Reception is strongly affected by the installation position of the antenna.

The antenna should not be installed under metallised windows and should, as far as possible, have a "free view" of the sky. It is possible to check how many satellites are being received via the GPS info menu. See "Function control of the GPS antenna (GPS info)" on page 54.

On average, more than 4 satellites should be received. It is not, however, merely the number of satellites which is decisive, but also the quality of the reception signal. Quality of reception depends on the weather, so that in the case of installations without sufficient reception potential, trouble-free navigation is possible in good weather conditions, whereas navigation may not always function faultlessly in poor weather conditions.

This behaviour often occurs when the reception antenna is fitted behind coated windows (e.g. Siglasol or other heat-protection glazing).

One indicator for poor GPS reception quality is a rapid change in the number of receivable satellites, where these cannot be accounted for by reception shading (buildings, bridges, trees or tunnels).

Solution: The most favourable installation position possible should be selected. In the case of all-round heat-reducing glazing, an exterior antenna connected via an adapter (optionally available) can be used.

Noise with external power amplifier (end stage)

Fault: Noise can be heard in conjunction with an external power amplifier.

Possible solutions:

- Use the line-out rather than the loudspeaker output connections for output to the external power amplifier.
- Correct setting of the sensitivity of the power amplifier at the unit's output.
Set the input level of the amplifier to approx. 3 Volt (3000mV) for this purpose.
In the case of a sensitive power amplifier input (e.g. 100mV) where no level adjustment is possible, an attenuator must be interposed.

Echo during phone calls

Fault: The other party hears an echo during phone calls.

Solution: Set the sensitivity of the hands-free microphone (see Operating Guide, under User Menu). In most cases, a setting between 0 and 3 achieves an optimum result.