

OMSI



The Omnibus Simulator



Manual

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OMSI - The Omnibus Simulator Manual

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1. Introduction

1.1. Foreword

“Such a work is never actually finished – one must simply declare it to be finished once one has done as much as possible given the time and circumstances.”

Johann Wolfgang von Goethe (1749 – 1832)

Welcome to the ultimate omnibus experience!

Travel back in time to West Berlin in the 80s! To a time when buses were still beige, S-Bahn trains from 1928 were still in service, and every trip to Western Germany was a grand adventure.

And you're right in the middle of the action! As a bus driver on route 92, it's your task, day and night, in all kinds of weather, to get your passengers from the Rathaus Spandau U-Bahn station to their homes on the outskirts of the city as safely and comfortably as possible.

You'll quickly realize that OMSI offers limitless driving fun, and not just on the way from point A to point B! Everything is here: real destinations, hydraulics, brakes, lights, engine, transmission, heater and much more, all of it exactly as it was in real life, and all of it waiting for you. Enjoy the privileged perspective and regal presence of a classic Berliner double-decker from the 80s!

Let your creativity loose! OMSI offers nearly limitless possibilities for creating your own landscapes and vehicles. With the Route Editor, you can easily alter existing routes or create your own.

Where did the idea for OMSI come from?

As children, we set off for school each morning, took our seats on the softly upholstered fake leather seats of an SD200, inhaled that typical SD smell, heard the characteristic hum and whine of the transmission



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and axles and the revving of the motor – and thought that it's the most normal thing in the world. We'd never have dreamed that these completely normal things would soon be part of the past.

Like the many organizations that lovingly care for historical vehicles and take them out for traditional outings to try to keep the memory of the past alive, we're attempting to do the same thing in a completely different medium.

We wish you a lot of fun with OMSI!

Marcel Kuhnt and Rüdiger Hülsmann

Berlin, February 2011

If you have any questions, please visit our website and our forum:

www.omnibussimulator.de

1.2. System requirements

To fully enjoy “OMSI - The Omnibus Simulator” your PC should meet the following system requirements:

- Operating system: Windows® 7 / Vista / XP
- Processor: 2.6GHz
- 3D video card Nvidia GeForce 86xx or equivalent
ATI card with 256MB memory, DirectX® 9.0c
- RAM 2GB
- DVD drive
- Sound card

You will need an internet connection for online registration!

Recommended equipment:

- Processor: 3.2 GHz Quad Core
- RAM: 4GB
- Video card with 1 GB video memory
- Force feedback steering wheel

1.3. Installation

You have to be logged in with administrator rights before you start the installation of “OMSI - The Omnibus Simulator”.

To start the installation of “OMSI - The Omnibus Simulator” simply insert the DVD into your DVD drive or run the file you downloaded from your shop account.

After you have chosen your preferred installation language, the welcome screen appears and you will be presented with some important information and the license agreement. Please read it carefully.



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You will be asked to insert your email address and your registration key. Please insert it exactly the way it was written on the label or in the confirmation mail you received from your download shop.

Please keep your registration key on a safe place, You will need it again if a new installation will be necessary.

The installation program will attempt to locate the correct path. If you wish to install to another location, then you will have to enter the correct path for installation manually. In order to do this, click on "Browse" and navigate to the correct path. Before the installation program starts to copy the files onto your hard disc, you will be presented with all the installation details.

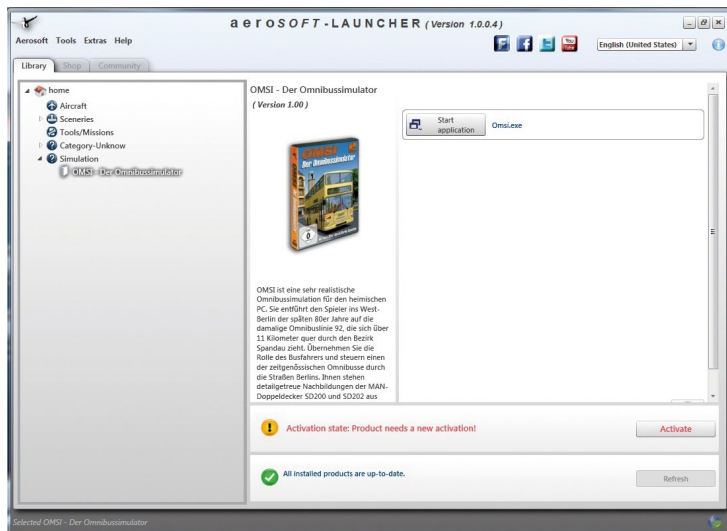
The installation program will now copy all of the "OMSI - The Omnibus Simulator" files onto your hard disk.

If you want to make any changes or to install any updates for this program you will need the DVD or the installation file from the download shop and your registration key again.

Important note!

Subsequent to the installation the Aerosoft-Launcher will be started for the online registration. Learn more about this program in the next chapter.

1.4. Aerosoft LAUNCHER



1.4.1. General information about the Aerosoft-Launcher

The Aerosoft-Launcher gives you an overview of all Aerosoft products installed on your computer. You will also have easy access to special features available for the several products.

Should the SOFTWARE PRODUCT require an Online Registration, the Aerosoft LAUNCHER will take you through this process. The Aerosoft-LAUNCHER will be automatically installed with the SOFTWARE PRODUCT and will launch at the end of the install process.

You can run the Aerosoft-Launcher at any time via the Windows START menu to check the activation state of your installed SOFTWARE PRODUCTS. Just follow this link:

START | ALL PROGRAMS | AEROSOFT | Aerosoft Launcher

The Aerosoft-Launcher starts up in the "Library" view by default. Here you can see an overview of all installed Aerosoft SOFTWARE PRODUCTS and their state of activation.

The following categories will be shown.

"Aircraft", "Sceneries", "Tools/Missions", "Category-Unknown" and "Simulation".

The SOFTWARE PRODUCT will be placed in one of these categories accordingly during installation. Older SOFTWARE PRODUCTS which do not need an online activation will be placed in the category "Category-Unknown".

In the "Library" view you will also see an overview of current Aerosoft News.

1.4.2. What is required for an installation?

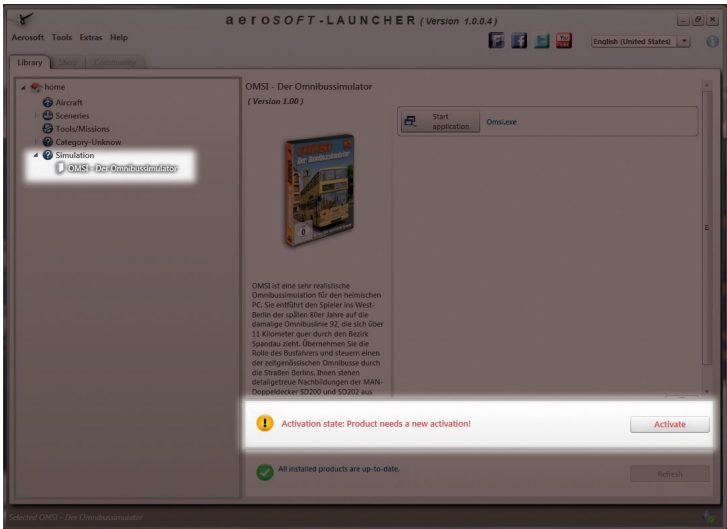
For an installation and an online-activation you will have to have administrator rights. Please make sure that you have these rights.

You will also need an active internet connection.

1.4.3. How do I activate a SOFTWARE PRODUCT?

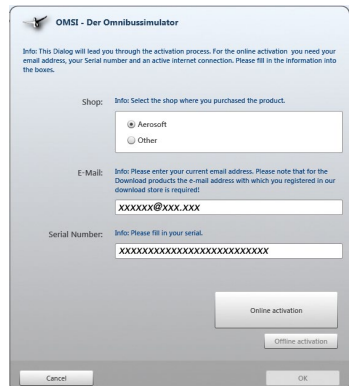
If necessary please change to the "Library" view and select the SOFTWARE PRODUCT for activation.

Click on the button "activate".



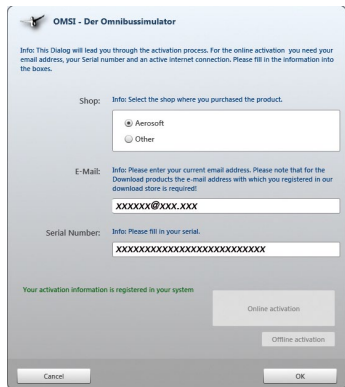
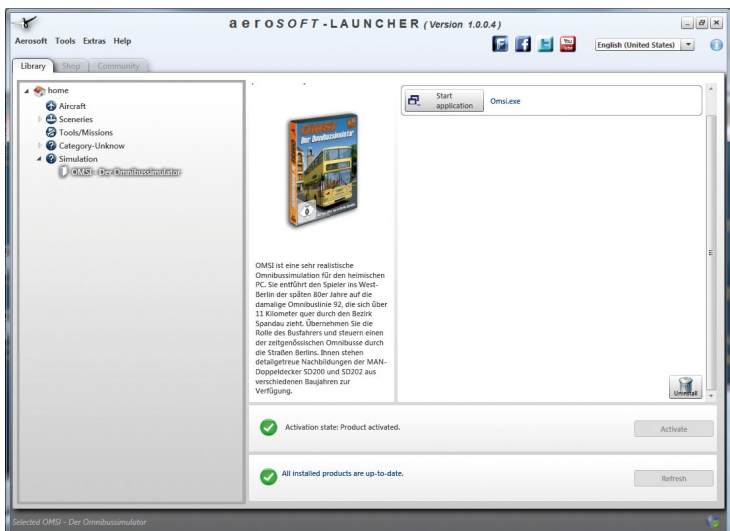
The following screen will appear:

Check your email address and your registration key is correct and click on „Online activation“. Please note you will need an active internet connection for this procedure.



You registration data will transferred to our Aerosoft server now.

Your information will now be transferred to the Aerosoft server. After a successful transfer your system will be activated and used without further limitations.

Please note that depending on the safety settings some data of the Aerosoft SOFTWARE PRODUCT need to be personalized.

1.4.4. Information about the activation status

GREY === undefined

GREEN == active

YELLOW = reactivation required

RED ==== activation unsuccessful

1.4.5. I want to install the SOFTWARE PRODUCT again. How do I do this?

The "Library" view will show the activation status of each SOFTWARE PRODUCT.

If it is shown in **GREEN**, the SOFTWARE PRODUCTS are active. A new activation is not necessary.

If it shows **YELLOW** the SOFTWARE PRODUCTS have at least been activated once but need a new online activation because of new hardware in your system. Click on the button "activate".

Please note that all required information has been correctly filled in.

1.4.6. There is an update available for the SOFTWARE PRODUCT. Does it change the activation status?

Normally the activation status will not be changed.

It is possible though that an adoption of the activation status on to the new installed data is necessary.

If this is the case change to the "Library" view and select the appropriate SOFTWARE PRODUCT.

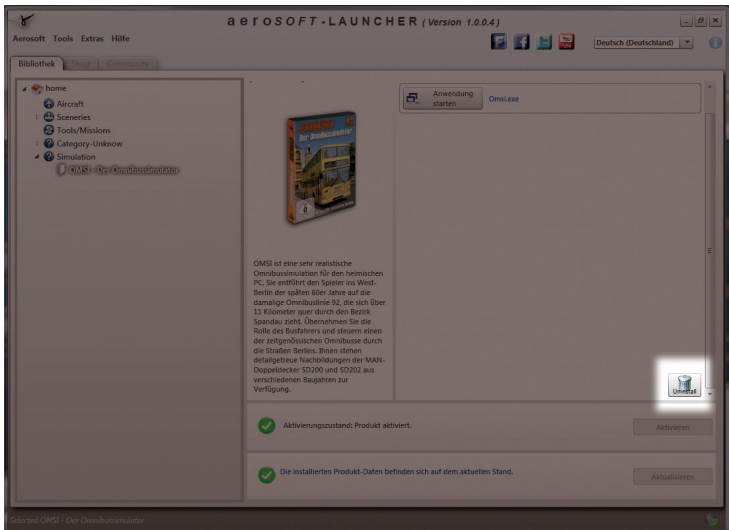
Click on the "refresh" Button to take over the activation status.

1.4.7. I have to reconfigure my PC-System or I have got a new PC. What do I have to bear in mind?

A check of the activation keys commences every time the Aerosoft-LAUNCHER is started. Depending on the activation status, a new activation might be necessary.

1.5. Removing OMSI

In order to fully remove "OMSI - The Omnibus Simulator" run the Aerosoft-Launcher. Change to the „Library“ and select „OMSI - The Omnibus Simulator“ in the „Simulation“ category. The information about OMSI will appear.



Click on the „Uninstall“ button. The installation program will start to remove the program from your hard disk.

1.4. About This Manual

The chapter “The First Kilometer” explains the OMSI controls in general and focuses on one bus in particular. It will walk you through the first steps, from starting the program to picking up your first passenger.

The other chapters explain things in greater detail, like the features of the simulator and the general controls of the buses.

Finally, the dialogue fields and options will be extensively explained.

1.5. Terms

Below you'll find explanations of some frequently used terms:

- **Situation:** You can save the current OMSI situation at any time and load it later. The situation includes the map you've selected, the type, location, condition and settings of all the buses, as well as the time and weather.
- **AI Traffic:** AI stands for “artificial intelligence”. The AI controls all the vehicles that are controlled by the computer (cars and trucks as well as other buses running on their fixed schedules). It also controls the passengers and pedestrians.
- **Current Bus / Current Vehicle:** The current bus is the bus that you currently control (via the keyboard, for example), and whose status is displayed. It can also be the case that there is no current bus. This is the case when, for example, there is no bus on the map or you've just deleted a bus and haven't chosen a new one yet. You can also select one of the vehicles controlled by the AI – in that case, the vehicle you select will become the current vehicle.
- **Refresh Rate:** Every process in the simulation and every graphical update occurs step-by-step. The speed with which the simulation runs or the graphics are updated is called the refresh rate, which is measured in frames per second (FPS). This unit of measure is like the physical unit for frequency, Hertz (Hz). A refresh rate of less than 20 FPS/Hz will appear shaky, but is

usually acceptable up to a certain point. Below 15 FPS, viewing the simulation is usually uncomfortable. In the 30-50 FPS zone, you'll notice that the simulation has reached the limits of perception, meaning that increasing the FPS further doesn't lead to a noticeable improvement. You can view the refresh rate by pressing the keyboard shortcut [Shift]+[Z] until "FPS: ###" appears.

- **Controller:** This is usually a joystick or steering wheel, but any kind of controller can be used, as long as Windows recognizes it as a Game Controller.
- **Status:** The status display shows a wealth of useful information about the current vehicle, the environment, and the simulation. You can browse through the various status displays by pressing [Shift]+[Z].
- **Map:** OMSI is a map-based simulation, meaning that the environment is contained in several "maps". They are independent of one another and aren't "physically" connected to each other. If you want to drive in a different city, you'll need to end the current simulation and begin a new simulation using the map for the other city – you cannot just drive from one city to another.

1.6. Keyboard Shortcuts

A note on keyboard shortcuts: The open architecture of OMSI allows you to create a (new) keyboard shortcut for any event that you can trigger with a mouse click or existing keyboard shortcut. That means that the shortcuts explained below are only valid as long as you haven't changed them.

In the following explanations, keys and shortcuts will be written in square brackets. [Num ...] will indicate one of the keys on the number pad, [Shift] will indicate the shift key, [Space] will indicate the space bar, and [Up], [Down], [Left] and [Right] will indicate the arrow keys.

1.7. Graphics Settings

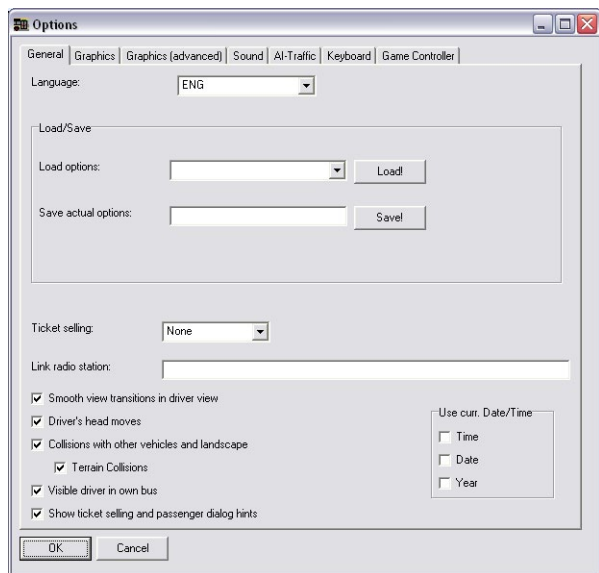
If your graphics card can support it without slowing down the simulation, we recommend activating Anisotropic Filtering and Anti-aliasing, which will yield noticeably better graphics.

2. The First Kilometer

Start OMSI in Fullscreen Mode via the Start Menu or the shortcut on your desktop.

2.1. Options

Open the Options menu by clicking on “Options...”. When you first open it, you’ll see the “General” tab.



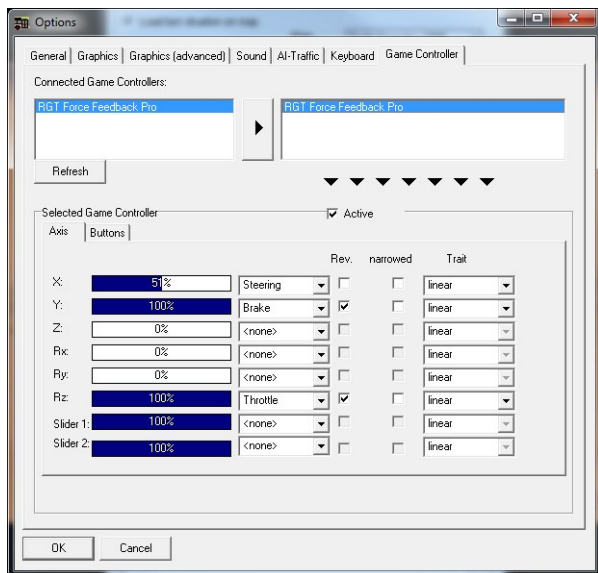
Choose the appropriate option set for your PC from the dropdown box on the right, next to “Load Options”, and load it by clicking on “Load!”. Descriptions of the various options are available in the “Menus and Dialogues” chapter.

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For the purposes of this tutorial, deactivate the “Time”, “Date” and “Year” checkboxes on the lower right. You can optionally activate “smooth driver view transitions”. Set Ticket Sales to “Easy”.

2.2. Steering Wheel / Joystick Configuration

If you’re using a steering wheel or joystick, you’ll need to configure it first. Click on the “Controllers” tab.



Follow the following steps in order:

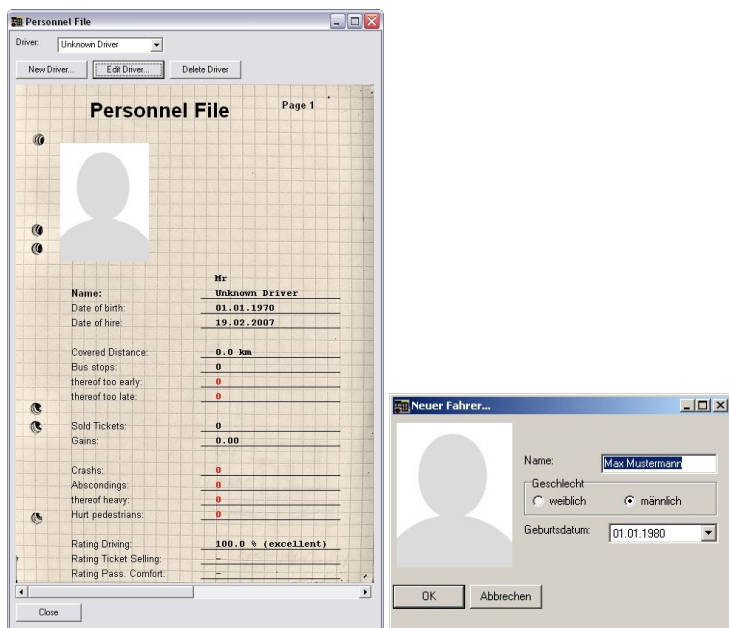
- Verify that your controller is listed on the upper left. If it doesn't appear, verify that it is correctly connected to your PC and that Windows recognizes it as a game controller.
- Select your controller from the list on the left and click on the triangle. Your controller will now appear in the list on the right. The list on the right is a list of all the controllers that have been configured for OMSI, including previously configured controllers that are not currently attached.
- Select your controller from the list on the right, tick the "Active" box if necessary, and switch to the "Axis" tab. Test which axes are described by "X", "Y", "Rx", etc. by moving the steering wheel or joystick and assign the appropriate function to them, like "Steering", "Throttle", etc. You can also invert the axis or alter the characteristics as necessary.

Once you're satisfied, click "OK" to confirm the changes in the Options menu. You'll return to the Start Menu.

2.3. Start Menu and Driver Files



At the very top you can select the current driver. When OMSI is first installed, the only driver listed will be “Unknown Driver”. To create a new profile, click on “Personnel Files”.



You'll see a summary of all available information about the driver. You can also create a new driver by clicking on "New Driver...". You can edit the profile of an existing driver by clicking on "Edit Driver". To change the driver's photo, double click on the current photo. Close the dialogue to return to the Start Menu.

Select a driver, click on "Load Map Without Buses" and then choose the tutorial map "Grundorf".

2.4. Map View

Click on “Start!”. The map will load. At first, there will be no bus that you can drive yourself. Depending on the settings, there may be AI buses.



The current camera will be the “Map View”. With this camera, you can view the entire map. You can change the perspective in the following ways:

- Move the mouse while pressing on the mouse wheel to pan the view.
- Move the mouse while pressing the right mouse button to zoom in or out.
- Click with the right mouse button on a specific point on the map to center the view there (only possible via the map view).

You'll be able to have a look around the surroundings using these features.

Next, set the weather. Press [Alt] to access the menu, and then click on



Select the weather preset called “Summerlike”.



2.5. Bus Selection

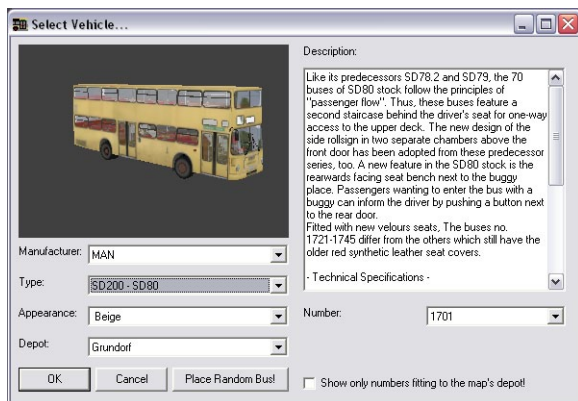
When you're ready, there are two ways to start driving a bus:

- You can select one of the AI-driven buses and take it over, or
- You can place a “new” bus on the map.

We'll choose the second option now. Press [Alt] and click on



You'll see the "Select Vehicle" dialogue.

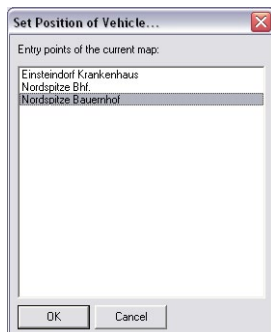


You'll be able to select the make and model – in this case, **select "MAN" and "SD200 – SD80"**. You can also choose the paint job, number (like 1749, our demo bus, which is also Traditionsbus GmbH's representative of the SD-series) and (especially important!) the bus depot.

The bus depot influences the available destinations and routes. If you've selected the "Spandau" depot by mistake, you won't be able to see any destinations belonging to Grundorf for there will be only Berlin-related destinations available. For the tutorial, you'll have to **select the "Grundorf" depot** and then click "OK".

The next dialogue field is for selecting where the bus should be placed.

Choose "Nordspitze Bauernhof". No worries: OMSI will ensure that the bus isn't placed on top of another vehicle. If all the available positions in a location are already occupied by other vehicles, the location won't appear in the dialogue.



Once you confirm by clicking on “OK”, the bus will be placed at the “Nordspitze Bauernhof” stop.



2.6. Driver View, Passenger View and External View

Now you'll be in the external view that follows the bus. You can change to another view by using the [F1] through [F4] keys.

[F1]: Driver View – The view from the driver's seat.



With the arrow keys [Left] and [Right] you can look to the left or the right. You can also (as in the map view) zoom and pan with the mouse. Press [C] to re-center the view or [Space] to return to a straight-ahead view.

There are also two special views: press [Insert] to view the bus schedule/route and [Home] to view the ticket sales area. Both views only last as long as you continue pressing the relevant key.


Press [F2] to switch to the Passenger View.



The previously described keyboard and mouse commands also work in this view, with one addition: if you press [Left] or [Right], you can move to another seat and, for example, move to a seat near the front of the bus or to a seat on the upper deck.

Press [F3] to switch back to the External View or [F4] to change to the Map View.

2.7. Set Time

It's a good idea to make your first circuit without any passengers. If you're not sure you can manage to pull around the AI bus that's directly in front of you, you can just wait a few minutes for it to pull away on its own or you can adjust the time so that the bus is already off on its route. Press [Alt] to call up the menu. Click on the  symbol to access the Date / Time dialogue.

Change the time to 10:15. The bus that had been parked in front of you will now be elsewhere, on its way to the next stop.

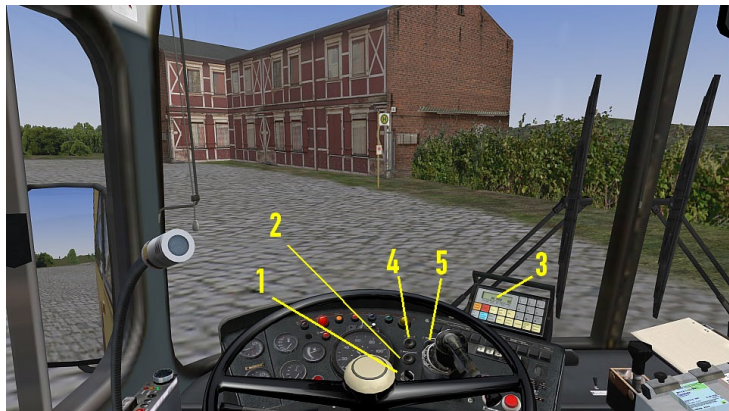


You can use this menu dialogue to change the date and time as you see fit, but only if there's no active timetable. If there's an active timetable, you'll still be able to set the time ahead, but not back.

Confirm the changes by clicking "OK". It may take a little while for all the AI vehicles to be moved to their new locations.

2.8. Driving the Bus

Now it's time to turn on the electrics the start the engine.






You can turn on the onboard electrics by pressing [E] or by inserting the key (1) in the key switch and then pressing the main battery switch (2), which is directly above it. The IBIS startup chime will play and some of the warning lights and the IBIS display will light up (3). Note that some vehicles, like the '77 SD200 and SD202, don't have a battery switch. You'll only need to insert the key in the key switch.

You can turn the engine on or off with the [M] key or with the starter (4) and engine cut-off (5). You can only start the engine if the transmission is in neutral. To turn off the engine, you must press the engine cut-off until the engine has stopped completely – otherwise, it may turn itself back on.

Once you've turned the engine on, you'll have to build up the air pressure in the compressed air system so that the brakes, suspension and doors will work correctly. Pay attention to the white indicator on the double pressure gauge on the left as well as to the red warning light. It goes out at around 6 bar, and the bus will be ready for action. It takes one or two minutes to fill the compressed air system.

2.9. Steering

If you haven't already decided on how you'll steer the bus, you need to do so now. You can use the keyboard or mouse, or a steering wheel or joystick if you've configured one. Test the steering now.


- Keyboard: Press [Num 8] to give it a little gas and [Num 2] to brake. Both should be audible. Press [Num 4] or [Num 6] to steer left or right and then [Num 5] to re-center the steering wheel. The accelerator and brake pedals react differently. When you release the accelerator, it will return to the neutral position. If you release the brake, it will remain depressed. To release the brake, you must tap the accelerator [Num 8]. You can also release it gradually by pressing [Num +]. If you press [Num +]+[Num 8], you'll floor the accelerator.
- Mouse: Press [O] or select  from the menu to activate mouse steering. Now you can steer with side-to-side movements of the mouse and accelerate or brake by moving it forward or backward.
- Steering Wheel / Joystick: You'll need to have configured a steering wheel or joystick. Press [K] or select  in the menu to activate the controller that you'd like to use and then test the accelerator, brake and steering controls. You can change the configuration of the controller by opening the menu [Alt] and opening the options ().



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- You can also use several devices simultaneously. Configure them as described above and then activate them all with [K].


While testing the controls, you can also have a look at your virtual feet – if the controls are working correctly, you'll be able to see the pedal positions change!

When you're ready to drive, put the transmission in gear (gear selector button "3", or [D] on the keyboard) and release the parking brake with [.]. Choose whatever route you'd like and get used to the controls. If you get into trouble, you can click on  in the menu to return the bus to a preset position.



2.10. First Aid


If you happen to get your bus stuck somewhere, you can put in reverse and back it out. Press [N] to put it in neutral and then [R] to put it in reverse. To put it back into drive, you'll have to first put it in neutral [N] again.

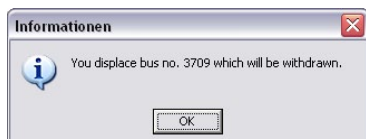
If you collide with another vehicle, you'll have to stop and activate the emergency lights by pressing [B]. Then open the menu by pressing [Alt] and call the police , who will respond to the accident and secure the victim. If you don't do this, you'll be charged with leaving the scene of an accident.

Collisions with other vehicles, objects or buildings can damage your vehicle. After an accident, the electrical system may be damaged or the transmission could be shot. You can repair damage and continue driving by opening the menu and selecting .

2.11. Your First Passenger Run

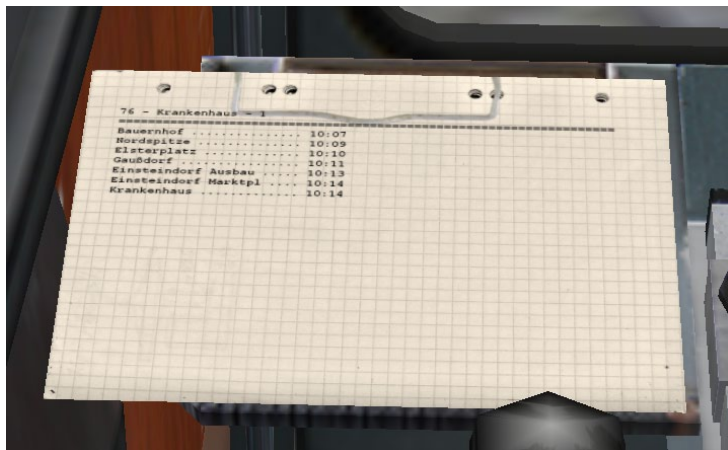
Are you ready? Then it's time to pick up your first passenger! Open the menu and click on  to return to the starting position at **Nordspitze Bauernhof**, or drive there yourself if you know the way. Set the clock in the menu  to **10:05**.

To begin your first circuit with passengers, you'll need to select a timetable. Click on the  in the menu to select a timetable. In this case, you'll need to select Line 76, and then tour 1. On the Grundorf tutorial map, this is the only line, and besides your bus, only one other bus will be active. Beneath the selection you'll find a slider which - after you've selected a line and a tour - automatically shows the next departure of that tour. In this case, the departure time should be **10:07**. If you move the slider back and forth, you'll notice that the buses depart the **Nordspitze Bauernhof** stop at **07** and **37** minutes after the hour. Select 10:07 and click on "OK". You'll see another window.




Since you selected tour 1, the AI bus is unnecessary and won't be in action.

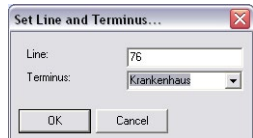
Now have a look at the route by pressing [Insert].



The header states the route, destination, and circuit number. Below that you'll see the departure times for the relevant bus stops.

Your next task is to inform potential passengers which route you're


driving. Open the menu and click on  to open the "Set Line and Terminus" dialogue. Enter "76", select "Krankenhaus" from the list and click on "OK". Switch to the external view [F3] and verify that the route and destination appear correctly (remember you can pan the camera around by pressing the mouse wheel).



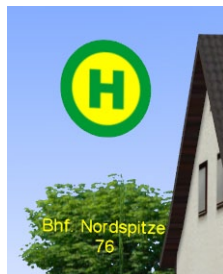
Drive to the first stop, set the bus stop brake [Num -] and then open the front doors with [Num /] and [Num *].

While the passengers are getting on the bus, it could happen that one of them still needs to buy a ticket. Press [T] to hand over a ticket and, if necessary, [Ctrl]+[T] to give change. Then click on all the bills and/or coins with which the passenger has paid. Don't get upset if some of the passengers are impatient – they don't know it's your first day.

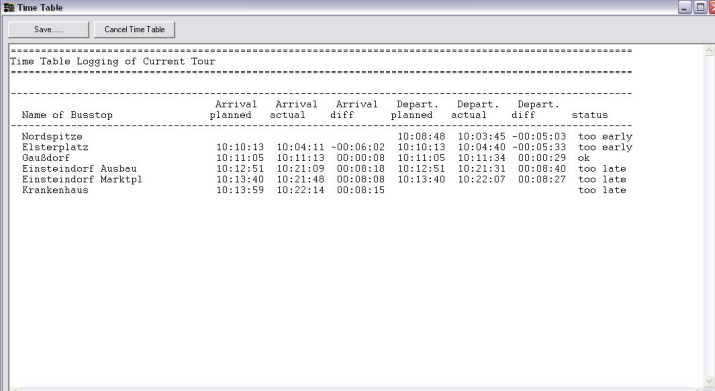
When you're ready to go, shut the doors again ([Num /] and [Num *]) and release the bus stop brake [Num -]. As long as you don't brake at this point, the bus will continue forward.

To orient yourself on your new route, you can turn on the guide by opening the menu and then clicking on .

When passengers want to get off at another stop, the yellow stop request light will light up on the dash. Stop at the next bus stop and set the bus stop brake [Num -]. The rear door will open automatically. After the last guest has exited the bus, the door will close automatically. Then you'll just need to release the brake [Num -] and continue driving.




When you reach the end of the line at the Krankenhaus stop and open the doors, you'll see a report.



Name of Busstop	Arrival planned	Arrival actual	Arrival diff	Depart. planned	Depart. actual	Depart. diff	status
Nordspitze				10:08:48	10:03:45	-00:05:03	too early
Elsterplatz	10:10:13	10:04:11	-00:06:02	10:10:13	10:04:40	-00:05:33	too early
Gaußdorf	10:11:05	10:11:13	00:00:08	10:11:05	10:11:34	00:00:29	ok
Einsteinendorf Ausbau	10:12:51	10:21:09	00:08:18	10:12:51	10:21:31	00:08:40	too late
Einsteinendorf Marktpl	10:13:40	10:21:48	00:08:08	10:13:40	10:22:07	00:08:27	too late
Krankenhaus	10:13:59	10:22:14	00:08:15				too late



The report will compare your performance with the actual schedule for the route. If you're more than **three minutes** late for a stop, you'll see a notice to that effect. If you're more than **two minutes** early for a departure, that will also be noted on the report.

When you close the route window, the next trip will begin – in this case, the return to the first stop at Nordspitze Bauernhof. If you'd like to end the scheduled tour, you can click on "Cancel Timetable" in this window, or, open the window again via .

Note: As long as you're alone in the bus, you can do as you please. But once you have passengers onboard, you need to follow the regulations for safety and comfort. Give them a smooth ride, don't brake abruptly or steer wildly, or else you'll annoy the passengers. If the ride is unpleasant enough, they'll want to get off again immediately.

Once you've mastered this tutorial, there's nothing holding you back from a career as a bus driver at the Spandau bus depot. Have fun, and don't work too hard!

3. Controlling the Simulator

This chapter explains how to operate the OMSI simulator. It explains how to control the buses, as well as some things you wouldn't find in real life. However, not all the dialogue fields will be explained in detail. You'll find more detailed information about them in the "Menus and Dialogues" chapter.

3.1. Start Menu

You'll begin with the Start Menu. You can select a driver profile and decide whether you'd like to continue driving on your previous map, start out on a "fresh" map without any buses, or load a saved situation.

Once you've made your selection and clicked on "Start", OMSI will load the map and situation. You'll see a status screen informing you of the progress. The status screen will disappear as soon as the loading process is complete.


You'll then see the map you selected.

If you select a saved situation or choose to continue playing your last game, it can be the case that you'll already have one or more buses, depending on the situation. Otherwise, you'll just see the map and the AI traffic.

If you'd like to return to the Start Menu, call up the menu [Alt] and click on



3.2. Situations

You can save the current situation at any time by clicking on . The current map, your current bus or buses, as well as their locations, the current weather, and the current date and time, will be saved. You can load a saved situation later by selecting it via the Start Menu.

3.3. Controlling the Camera

3.3.1. Cameras

You choose from four different cameras through which you can view the world: the driver view [F1], the passenger view [F2], the external view [F3], or the map view [F4].

- In the **driver view**, you'll see the world through the driver's eyes.
- In the **passenger view**, you'll see the world from the point of view of a passenger in the current bus.
- In the **external view**, you'll see the current bus from a third-person perspective that will follow the bus as it moves.
- In the **map view**, you'll also see the world from a third-person perspective, but rather than following one of the buses, you'll be able to move the camera freely over the map by clicking with the right mouse button.

3.3.2. Panning and Zooming

You can pan and zoom the camera in all four views. To pan the camera, click and hold the middle mouse button or the mouse wheel, and then move the mouse.

In the same way, you can click and hold the right mouse button to either zoom in or out (if you're using one of the first-person views) or move the camera nearer or farther from the bus (external view) or center point (map view).

3.3.3. Perspectives

In the driver and passenger views, there are several perspectives. You can cycle through them using the [Left] and [Right] keys. Once you've reached the last perspective, you'll automatically return to the first perspective the next time you cycle. You can control the transition between the various perspectives (quick shift or crossover) via the options dialogue.

Both of these views have a "standard" perspective. You can return to the standard perspective by pressing [Space]. If you press [Space] in the external view, you'll automatically return to a behind-the-bus view.

3.3.4. Special Perspectives

To get a quick peak at the route and schedule or the cashier's table, there are two special views available. Press and hold [Insert] or [Home] to access them. These perspectives are also included in the "normal" set of perspectives and you can also reach them by cycling through the perspectives with the arrow keys.

3.3.5. Status

You can also call up a status report: a set of red lines at the top of the screen with useful information. As soon as a passenger says something or a ticket sale commences, it will be shown in the status display, as long as you haven't deactivated it. You can deactivate the status display in the options dialogue by turning off the "Show Ticket Sales and Passenger Dialogue" option.


Press [Shift]+[Z] to view or hide the status display – each time you press the combo, you'll see more and more information in the status display until it disappears.

3.4. Buses


In OMSI, you can drive more than just one bus. While you naturally can't drive more than one bus at the same time, you can park a bus somewhere and then switch to another bus. You can also add a "new" bus later or delete one of the existing ones.

3.4.1. Changing the Current Bus


You can change the current bus in two ways:

- By clicking directly on another bus in the map view and then clicking "Yes" to confirm the change.
- By opening the menu, clicking on "Find Bus" , selecting the bus that you'd like to take over, and then clicking "OK" to confirm.

3.4.2. Adding a New Bus


To add a new bus, just click on the  symbol in the menu. A dialogue will open, allowing you to select the bus and configure its settings. This feature is not available if you have a bus with an active timetable.

3.4.3. Deleting the Current Bus


To delete a new bus, just click on the  symbol in the menu. This feature is not available if you have a bus with an active timetable.

3.4.4. Placing a Bus



You can also place a bus in a new location, as long as there is no active timetable. There are two additional options:

- You can click on an open space in the map view with the left mouse button. You'll be asked if you'd like to place a bus there. If you confirm, a bus will be placed there and will automatically face in the same direction that the camera is facing. Because of this, a new placement may require a bit of practice.
- You can also place the bus at a preset location. If you click on  in the menu, you'll see the same dialogue as that for adding a new bus.

3.4.5. Taking Control of a Bus


If the current bus is an AI bus, you can take control of it by clicking on . The AI will be deactivated so that you can (and must – otherwise, there'll be no one at the wheel!) drive the bus along its route. But watch out – the process is immediate, even if the bus is barreling down the Autobahn at 100 km/h!

3.4.6. Handing over a Bus


You can also hand over your bus, as long as OMSI recognizes your location, by clicking on . If you have an active schedule and OMSI can determine where you are on the route, the AI driver will take over for you and continue driving the bus according to the schedule. If OMSI can't orient itself, the AI driver will drive the bus on a maintenance circuit (you'll see how the AI driver will behave when you click on  symbol).

3.4.7. Configure Destination Displays


Our buses offer the possibility to configure the route and destination displays via the controller, just like in a real bus. You can also configure them more quickly (though less realistically) via the dialogue that you

can access via the  symbol. While the destination must be selected from a list, the line number can be entered manually. Note: not all the letters and symbols that you can type can necessarily be displayed by the bus.


3.4.8. Announce Accident

If you collide with a car or another bus, it will stop and turn on its emergency lights. As in real life, you should call the police. You can do so by clicking on the  symbol. Depending on the severity of the accident, it could take a while. Since a real police investigation would be too time consuming, we've limited it to a few dialogues that will inform you how much time you've lost. Once the scene of the accident is clear and all the damaged vehicles have been removed, you can continue driving. The current time will have been set forward.


3.4.9. Repairing Your Bus

An accident can result in damage to the engine or transmission, or a short circuit in the electrical system, or some other kind of damage. In the best case, you can continue driving without the full electrical system, but you might not be able to continue driving at all. In that case, you can repair the bus by clicking on .

3.4.10. Washing Your Bus

Even if you don't get into any accidents, your bus is still going to get dirty, especially in bad weather. As soon as you pull into a depot or gas station, you can wash your bus by clicking on the  symbol.

3.4.11. Tanking Up

A bus naturally requires fuel. To tank up, you need to pull into a depot or gas station and click on the  symbol. The gas tanks in the buses are large enough to hold enough fuel for several circuits, so it's unlikely that you'll find yourself stranded on empty – but it's still something to watch out for!

3.5. Environment and Map


3.5.1. Time and Date

You set the time and date in OMSI by clicking on the  symbol.


The sun, moon and stars will change positions based on the time and date settings, and the traffic and passengers will also react to different time and date settings. You can also check if the selected date is a holiday or a school vacation, which will also have an effect on the route and schedule for your bus!

Note: Once you're out on an active timetable, you cannot set the time back (though you can advance it)!

3.5.2. Weather

You can change the weather in OMSI by clicking on the  symbol. In the weather dialogue you can select real weather, choose a weather scenario, or set the individual weather parameters, like clouds, precipitation, wind, barometric pressure, humidity, etc. You can also "dry" the streets or clear the snow – they won't automatically return to normal as soon as the rain or snow stops!

3.5.3. Direction signs

If you're not sure about where to go, or the map is unfamiliar, you can activate directions by clicking on .

You'll see yellow arrows with red letters at the intersections, indicating the various routes and destinations. Streets that are cul-de-sacs in OMSI (but not in real life), are marked with cul-de-sac signs so that you know ahead of time that there's no exit. The bus stops on the route are also marked with a green "H" in a green circle. Beneath it you'll see the name of the bus stop and the routes that stop there.

4. Controlling the Buses

This chapter describes how you can control the buses and their systems. At first, the information will be general – later, the special characteristics of the MAN SD200 and SD202 will be explored in more detail.

4.1. Steering, Accelerating, Braking and Working the Clutch

In OMSI, there are three ways to steer, accelerate and brake: with the keyboard, the mouse or a controller (like a steering wheel or a joystick). You can also use TrackIR to control the view.

4.1.1. Keyboard Controls

Keyboard control is the default when mouse control isn't active or no joystick or steering wheel is configured.

You can accelerate with [Num 8]. Pressing the key won't fully depress the accelerator, because it isn't usually necessary and will only make your passengers uncomfortable. As soon as you release the key, the bus will stop accelerating.


If you do want to fully accelerate and use the automatic transmission's kickdown feature, then press [Num 8]+[Num +].

You'll also probably want to know how to stop the bus. [Num 2] is the brake. The longer you hold the key, the more you'll "press" on the brake, so the longer you press, the harder you'll brake. If you release the key, the brake remains depressed, but at the level it was at when you were pressing it. This way, you can brake more precisely without angering the passengers with sudden, jerky stops. If you'd like to gradually release the brake, press and hold [Num +]. To release the brake completely, press [Num 8].



Naturally, it's also important to know how to steer. [Num 4] and [Num 6] will turn the steering wheel. As long as you press and hold one of the keys, the steering wheel will continue to turn to the left or the right. When you release the key, the steering wheel will remain where it was (so if you were turning to the left, and you release [Num 4], the bus will continue to turn to the left. If you want to drive precisely straight ahead, press [Num 5].

4.1.2. Mouse Control


You can activate mouse control by clicking on the  symbol or pressing [O]. Mouse control will be activated immediately and you can steer the bus using the mouse (moving the mouse up = accelerate, to the left or right = steering, down = brake). The faster you drive, the more precise the steering will be, so that you don't turn too abruptly at high speed.

If you'd like to turn off mouse control, just click the right mouse button once – but watch out, the bus will continue to drive forward. You can immediately take control again with the keyboard controls.


The disadvantage of mouse control is, of course, that you can't operate any of the switches in the bus with the mouse while it's active.

4.1.3. Steering Wheel and Joystick Control

The most realistic control setup is naturally a steering wheel with accelerator and brake pedals.

If you've correctly configured the steering wheel (see the chapter "First Steps" and "Menus and Dialogues"), you can activate it with [K] or by clicking on . If the steering wheel is still connected the next time that you start OMSI, it will be activated automatically.

4.1.4. TrackIR

If you've installed TrackIR, you can activate and deactivate it by clicking on , as long as the TrackIR software is running. TrackIR is only used in the internal first-person views, since it would make no sense for the third-person external views.

4.2. Depot File

Just as a real bus can only display routes and destinations from its normal area of operation, when placing a bus in OMSI, you need to consider which set of routes and destinations your bus will use. To make this as easy as possible, we've created "depot files".

Every depot file contains the routes and destinations that are appropriate for the buses from specific depots. For example, you'll only see the "Spandau Johannesstift" stop on the display of a bus from the Spandau depot, while the "Einstein Dorf Krankenhaus" stop (from the tutorial map) is only present in the Grundorf depot file.

If you'd like to make your own add-on map for OMSI, you can (particularly for the buses with matrix displays) create your own depot file, which will include exactly the stops that you employ on your map.

For this reason, when placing a new bus, you need to be sure that you associate your bus with the right depot – if you don't, you won't see the correct routes and destinations!

4.3. Schedule & Passengers

4.3.1. Stops

It's really quite simple: stop at a bus stop so that people can get on, open the doors and wait until everyone has boarded, and then continue driving. The same goes for passengers who want to get off the bus.

But beware – passengers only board buses that they expect! You'll need to switch the destination display to a destination that the passengers recognize:

Route 76 in Grundorf (fictional, tutorial):

- Nordspitze Bauernhof (north end)
- Einsteindorf Krankenhaus (south end)
- Bhf. Nordspitze.

Linie 92/13N in Spandau:

- Freudstr. (north end)
- Stadtgrenze or Reimerweg (south end)
- U Rathaus Spandau, U Altstadt Spandau and Westerwaldstr. (intermediate stops)

4.3.2. Passengers

Cheerful Berliners (there may be add-ons for Hamburg, Munich, Dresden, etc. later...) want to ride along with you. As they board the bus, they'll greet you, or possibly complain if something's bothering them, and will request tickets (if you've configured OMSI to do so). When the passengers want to get off the bus, they'll press the "stop" button, which will cause the stop requested signal in the bus and on your dashboard to light up (it's large and yellow or orange). But they won't get off if there's no bus stop – unless your driving style is so wild that they decide to flee the bus!

4.3.3. Ticket Sales

The process is always the same: the passenger will come up to your cash desk, say what he or she wants (if the passenger just wants a normal ticket, he or she won't say anything at all), and then place some money on the table.

If you've selected "easy" mode, you just need to click on the money to collect it and then press [T] to hand over a ticket or [Ctrl]+[T] if they need change too.

If you've selected "advanced" mode, then you'll have to do it just as in real life:

- In the D92, there's a ticket printer. Press the (correct!) ticket button and confirm by pressing the long green button on the lower right. If it's the wrong ticket, you can tear it up (click on it) and then repeat the process. If it's the right ticket, the passenger will take it.
- The other buses just have ticket pads – you can tear off the correct ticket by clicking on it.

(In Berlin, the driver would actually have to stamp the tickets as well. You can see the stamp in OMSI, but since it won't be necessary for add-ons that employ different ticketing systems, we've left it out here...)

- Make correct change by clicking on the appropriate buttons on the change machine. Tip: You can use the keys on the upper row to get several coins at the same time and thus give out larger sums of money with fewer clicks. The buttons indicate how much change the machine will produce. If you've miscounted, the passenger will let you know. Extra coins can be removed by clicking on them.

Note – make change using the fewest number of coins. If you hand out too much small change, some of the passengers are sure to complain. Don't worry – you'll never run out of change, so you can make change with whatever combination of coins you like.

And don't forget, at the time (1989), the old Deutsch Mark was still in use, and there was no 20-Pfennig coin!

4.3.4. Schedule

If you think you're ready, you can try driving a route according to a real schedule. Open the related dialogue (more info in the "Menus and Dialogues" chapter), select a route and circuit. You can also review when the next scheduled departure is.


Example: You're at the Spandau depot at 10:00. If you select route 92 with circuit 1, you'll see that the next departure for the Stadtgrenze stop is at 10:23.


Normally, you'll want to take over for the AI bus on this route, but you can also check the "Additional bus" box. If you take over for the AI bus, it will return to the depot on a maintenance circuit and you'll have the route to yourself. If you check the additional bus box, you and the AI bus will both drive the route.

You can only select circuits that are appropriate to the current time and date – you cannot, for example, select a circuit normally scheduled for Sunday on a Friday.

Now it's your job to drive according to the schedule. In the example above, you'll have to switch your display to "Maintenance" and drive to the final destination at the Stadtgrenze stop. Once you're there, you'll need to change the destination display to "Freudstr." – if you don't, the passengers won't want to board the bus.

If you're driving according to the schedule, you'll find a page noting the departure times for all the stops that you'll have to service. You can also access additional information (next stop, departure time, delay) via the status display ([Shift]+[Z]). In the D92, the current delay is also displayed on the IBIS display.

If you click again on the  symbol, you'll see the status report, which you can also save as a text file. You can also stop driving according to the schedule via this window.

As soon as you've opened the doors at the last stop, this dialogue will automatically appear. The first trip is over, and the next one will be activated. If you'd rather drive freely, just click on the  symbol and then on "Cancel timetable".

If you close OMSI, the current status will be displayed and you can continue from there the next time you start up!

When you take over an AI bus, you also automatically take over its current route and schedule.

4.4. The MAN SD200

This bus is a standard double-decker and so it follows the VöV standard bus guidelines, just like the single-decker MAN SL200 or the Mercedes-Benz O305.

The chassis was manufactured by MAN and the superstructure by Gaubshat, Orenstein & Koppel as well as Waggon Union. In total, West Berlin received 956 buses of this type from 1973 to 1985.

There are many important differences (in OMSI as well!) among the models from each year. The first SD74 models (built in 1974) are very similar to the final SD85s, but many components and systems changed several times over the years. The motor, power train, destination display, rear axle, steering wheel, dashboard, seating, interior paint job, windshield wipers, height of the lower deck, and flooring, as well as the number of stairways, and much more, changed over the years.

In OMSI, the following models are available (only the most important differences are listed):

- The SD77, which has only one stairway to the upper deck and the side display in the first window after the front door.
- The SD80, which has two stairways and a side display above the front door.
- The SD81, with the Standard 1 "facelift": angular rear lights, brake lights and turn signals on the back, a modern steering wheel, plush seats and modern pictographic signal lights on the dashboard.
- The SD82, which has the first matrix display (though it's still light gray).

- The SD83, which included light grey as well as light green matrix displays as well as some buses with a (fully-automatic) rollsign.
- The SD84, which had a new motor and light green matrix display.
- And finally the SD85, which had a modern transmission which automatically shifts to neutral when the stop brake or the service brakes are activated, and which has a wider retarder range up to standstill.

4.5. The MAN SD202

The SD202 is a standard double-decker from the 2nd VöV generation, which, like all VöV-II buses, differs from its predecessor in its angular form, smaller tires, lower entry height and modern interior.

As with the SD200, the Waggon Union in Berlin added the superstructure to the MAN chassis. After three prototypes produced in 1982-83, 468 buses were manufactured from 1986 through 1992.

Also like the SD200, the design varies from year to year, though the differences are smaller because of the shorter production life of the SD202. The main differences were in the design and mechanism of the doors, the color of the grip bars, and, starting in 1988, the modified interior design for handicapped access.

The SD202, though not explicitly designed as such, can be considered the first low-floor double-decker thanks to its step-free entrance. Once true wheelchair-accessible buses were introduced in the early 90s, the formerly "wheelchair-accessible" SD202 was redesignated as merely "wheelchair-friendly", since the newer buses had additional means of assistance like ramps or the ability to "kneel".

The following models are represented in OMSI:

- The D86, with angular wheel wells, large engine compartment, silver MAN logo, compressed-air doors, narrow window rubberization and brown poles.
- The D87, with round wheel wells, smaller engine compartment, and black MAN logo.
- The D88, with wheelchair-accessible design and a larger baby carriage / wheelchair area, electric doors, red poles, and a MAN logo with no periods.
- The D89, with a new upper-deck heating system, resulting in the rear bench being moved forward and a new arrangement of the air vents on the sides.
- The D92, with interior destination displays, an IBIS 2 system, and ABS and ASR. In OMSI, this model also has the ticket printer that was introduced in the 90s. The exterior of the bus is spick and span, since it didn't actually exist yet in 1989... :-)

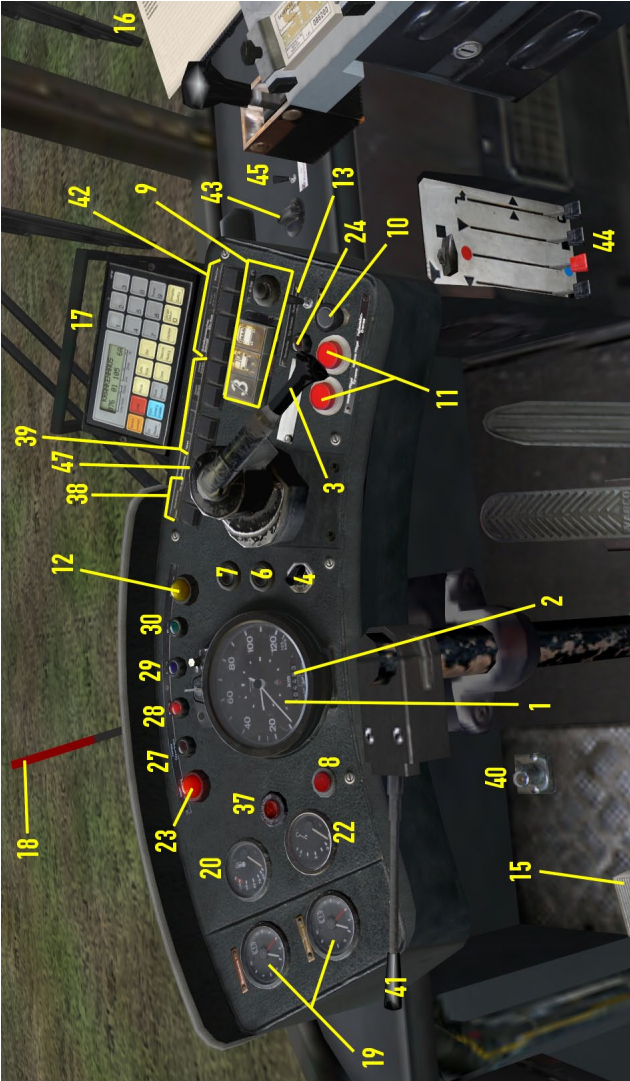
4.6. SD200 and SD202 cockpits

Since the SD200 and SD202 are operationally so similar, the systems for both buses will be explained together.

4.6.1. Dashboard

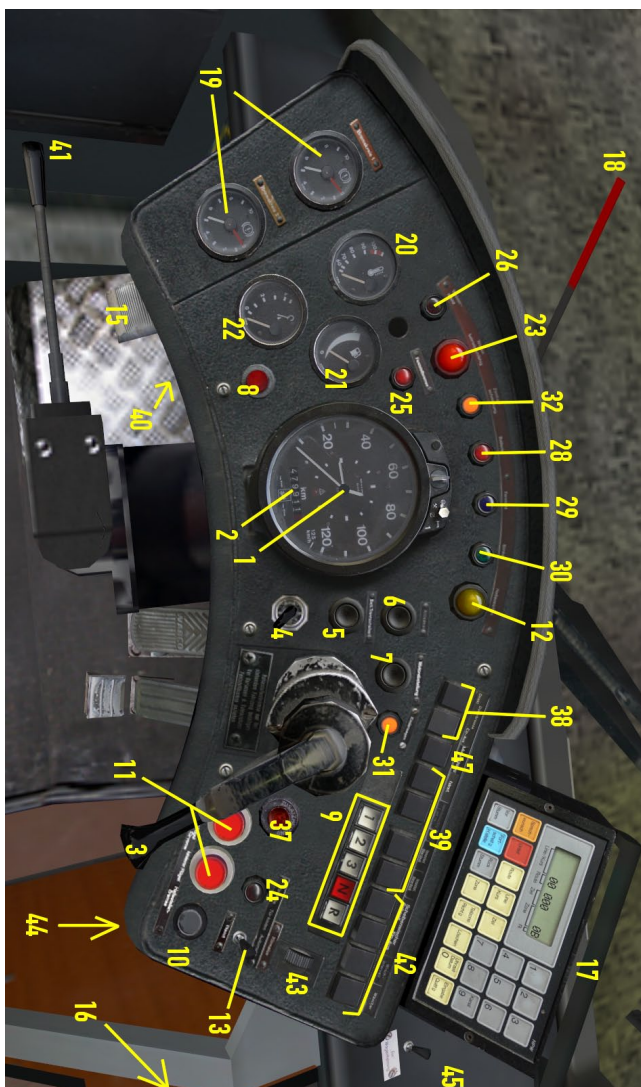
On the following pages you'll find pictures of the dashboards of the SD77, SD80, SD81, SD85, D86 and D92. The dashboards of the other models differ only in a few details from those pictured in the manual. The following explanations apply to all of the dashboards.

For a better overview, you can "hide" the steering wheel by clicking on the steering column.



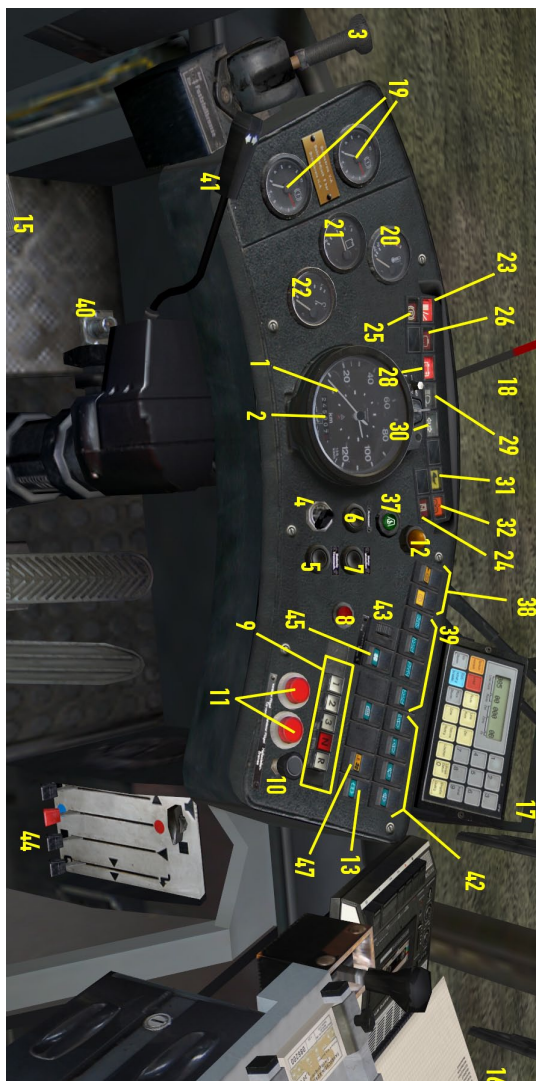
Dashboard SD77

Dashboard SD80



Dashboard SD81

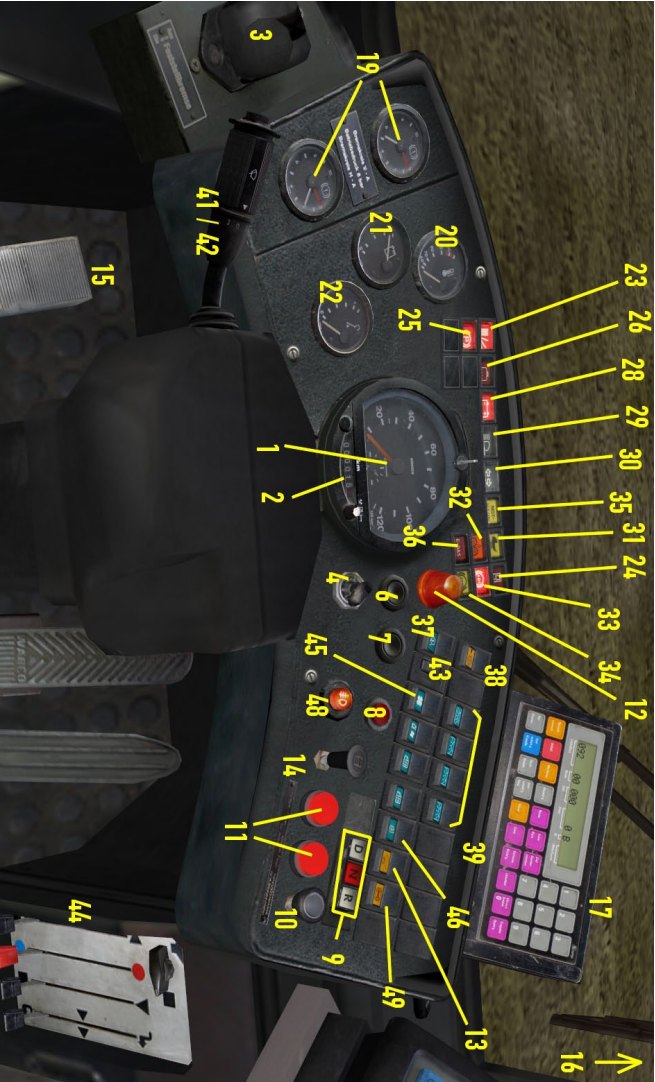




Dashboard SD85



Dashboard D86



Dashboard D92



- (1) Tachometer in km/h and the clock
- (2) Odometer in km (when creating a bus, it will be automatically set to a sensible value depending on the production year and the current year in OMSI)
- (3) Parking brake, works on the rear axle, can also be set with [.] – it's like the parking brake in an automobile, but the spring-loaded brake is released by compressed air. Thus, a bus with too little air pressure in the system will automatically brake, since there's not enough pressure to keep the brake from automatically engaging.
- (4) Key switch: Removing the key will disconnect the battery. To return power to the bus, the key must be reinserted and the main battery switch (5) must be depressed (except if the bus is a SD77/SD202, in which case you'll only need to insert the key). Turning the key will activate the parking lights (middle, [Shift]+[L]) and the low beams (right, [L]). In the left position, the light is off (press [L] again or [Shift] + [L]).
- (5) Main battery switch. The bus will power up only after you've pressed the button (assuming that the key has already been inserted). (Not present on the SD77.)
- (6) Starter – [M])
- (7) Engine cut-off – [M], must be pressed until the engine is completely off.
- (8) Warning lights
- (9) Gear selection: On 3 or D, all three of the normal gears will be used. On 2, only the first two gears will be used. On 1, only the first gear will be used. R is reverse and N is neutral. Remember – shifting from forward to reverse, or from reverse to forward, is only possible if you shift into neutral first. You can also use the [N], [R], [D] (for 3), [1] and [2] keys.

The SD77 is an exception to this rule: Instead of the neutral button, you'll have to press the current gear button a second time.

To shift out of reverse, you'll need to press the "R-frei" ("reverse free") button as well (to the right of the gear selection buttons). The D92 has no "1" or "2" buttons and the "3" button is replaced with the "D" button.

Note: the reverse gearing only operates at walking pace. Always shift when the motor is idling.

- (10) Bus stop brake: Can also be set with [Num -]. The bus stop brake is active when the bus is completely stopped and holds the rear axle with 3.5 bar pressure. Only if the switch is pulled will the front doors open. When the brake is active, the automatic rear doors are also activated. If the baby carriage switch (35) is activated, or a stop-request button is pressed by you or one of your passengers, then the rear doors will open. Once a certain amount of time has passed, and no passenger stands in the exit area (or the stop or baby carriage button isn't pressed again), the doors will close. Even if you press the bus stop brake button while the doors are still open, the brake will only be released once the rear doors are closed.
- (11) Button for the front doors: The left button opens the front partition, the right button opens the rear partition. You can also use [Num /] and [Num *]. They work only when the bus stop brake switch is activated (SD77 through D87) or when the bus stop brake is actually set (D88 through D92)
- (12) Stop request light: Light up along with the "stop requested" sign as soon as a passenger (or you) presses one of the stop-request buttons or you press the baby carriage switch (13).
- (13) Baby carriage switch: As long as you have this switched on, it acts like a (continual!) press on the stop button. While driving, the bus stop sign and the stop request light will light up. If the bus stop brake is active, the rear door will open and remain open until the switch is turned off. This makes it easier for passengers with baby carriages, wheelchairs or heavy luggage to get on and off, and can help air out the bus in the summer.

- (14) 8:00pm switch (only on D92): If it's active, you can set the bus stop brake and open the front doors without opening the rear doors. The switch is so named because in Berlin, passengers are allowed to disembark between bus stops after 8:00pm, but only via the front doors. In order to prevent the back doors from opening on such occasions, the 8:00pm switch was introduced in the early 90s.
- (15) Microphone foot pedal: Can also be activated via the clutch pedal or [Q]. As long as the pedal is depressed, you can announce upcoming stops via a microphone attached to the PC (the announcements aren't recognized by OMSI ;-)) and the IBIS device will advance to the next stop. It also triggers the bus stop announcement on the D92.
- (16) Schedule
- (17) IBIS, see below
- (18) Pressure gauge warning: When the needle points up, there's not enough pressure in the compressed air system. The bus is not ready for action!
- (19) Double manometer: The SD200/SD202 buses have two brake circuits. The red pointer indicates the current brake pressure (0 bar, if the brakes are not in use) and the white pointer indicates the amount of air pressure held in reserve. You can try it yourself – if you brake while the bus is stationary, the brake pressure will shoot up and the pressure reserve will fall somewhat. Only when the engine is running will the pressure reserve be replenished. The doors and the parking brake also draw on the pressure reserves.
- (20) Coolant temperature: A measure indicating if the engine is too cold or too hot. If it exceeds 100 °C, you're in trouble! On the other hand, you can also see how effectively the heater is working. When the coolant is cold, you'll have to turn the engine block heater on.
- (21) Fuel gauge (except on the SD77 – you'll need to check in in the status display!)

- (22) Oil pressure gauge
- (23) Warning light „Not ready to drive!": Lights up when the engine isn't on or there's not enough compressed air, and thus not enough braking power.
- (24) Rear door indicator: Lights up when the rear doors are open. If they remain open, it's time for the classic slogan "Please stand clear of the rear door or we're gonna rot here forever!" But this shouldn't happen in OMSI - if it does anyway, turn the baby carriage switch on and off and the door should close.
- (25) Parking brake indicator light
- (26) Water level indicator light (not functional)
- (27) Oil temperature indicator light (not functional)
- (28) Battery light: Note, if the alternator doesn't produce enough electricity, the battery will be used. Normally only on when the engine is off.
- (29) High beams indicator light
- (30) Turn signal indicator light
- (31) "Baby carriage indicator light: A passenger has pressed the baby carriage button outside the bus. If you turn the baby carriage button switch on and off, the light will turn off. Normally, this is the means with which a passenger will let you know that they need to move a baby carriage onto the bus, but that won't actually happen in OMSI. You can press the button yourself, though! ;-)
- (32) Centralized lubrication system indicator light: Intermittently lights up while driving as the system lubricates the axles as well as the bearings.
- (33) ABS indicator light (D92 only): Lights up when the anti-lock braking system is active, as well as in the period between turning the electrical system on and beginning to drive.
- (34) ASR indicator light (D92 only): Lights up when the ASR system is active or when it is turned off.



aerosoft CLUB

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- (35) Emergency valve indicator light (starting with the D88, not functional)
 - (36) E-Gas indicator light (for D88 and higher not functional)
 - (37) Auxiliary heating system: you can warm up the coolant if it's cold outside so that the engine will warm up more quickly. The auxiliary heating system takes a while to get started and also continues to run briefly after it's been turned off.
 - (38) Direct retarder (left) and On/Off (right, not available on D92): these switches control the retarder, a wear-free hydraulic brake built into the power train which produces a distinctive sound. With the right switch (normally in the "on" position", the retarder only comes into action when the brake pedal is depressed. If you switch the switch on the left on, then the retarder will activate as soon as you release the accelerator and will have a greater effect. This mode is useful when descending a steep grade and can conserve the brakes. The retarder should be turned off when driving on ice so that you can brake more accurately.
 - (39) Light switches for the driver's light directly overhead, for the first light on the right side of the lower deck, and the lights in the upper and rest of the lower deck. You can also use the [6], [7], [8] and [9] keys.
 - (40) High-beams foot pedal (only on the SD200): it's usually easier to just use [F]. When the light is out, it works like a flasher; you can turn the high beams on and off with it. In OMSI, you can also waive your right of way if you use the flashers.
 - (41) Turn signal (starting with the D89, it also controls the windshield wipers).

- (42) Windshield wipers: in the SD200, from left to right, the controls are "fast", "on/off", "interval" and "washer". In the SD202, it's part of the steering column and starting with the D89, it's combined with the turn signal (the washer is a button on the outer edge). The button for the washer is spring-loaded, so you'll have to continue to press it as long as you want to wash the window. You can control the "on/off" switch with [W], the "interval" switch with [Shift]+[W] and the washer with [Ctrl]+[W].
- (43) Fan: depending on the setting, it will circulate fresh air, heated fresh air, or heated recycled air in the interior of the vehicle.
- (44) Front heater: the red lever, second from the left, is especially important, as you can switch from blue (cold) to red (warm). With the lever on the far right you can regulate the air circulation – heated fresh air is up, unheated fresh air is middle, and heated recycled air is down. If it's cold outside, recycled air will be more effective, but there will be no fresh air.
- (45) Interior heater: you can warm up the entire bus.
- (46) Rearview mirror heater (no function)
- (47) Engine cooling: normally, the engine fan activates automatically thanks to a thermostat, but you can also control it manually.
- (48) Fog lights (D92 only).
- (49) ASR switch: You can turn the ASR system on and off (D92 only)

4.6.2. Compressed air system

The SD200/SD202 is equipped with a compressed-air system, which is used for the brake and door systems. The twin manometer (19) displays the current status of the compression system. The pressure is created by a compressor that is directly connected to the engine. As soon as the operating pressure of 8.5 bar is reached, you'll hear the compressor disconnect from the compressed air system, accompanied by an audible hiss and a steady whisper which you can hear if you're outside the bus. As soon as the pressure falls to around 7 bar, the

compressor will automatically reconnect to the compressed air system (you'll hear a click and the hissing will stop). The compressed air serves four systems – brakes for the front and rear axles, the parking brake, and the doors as well as the suspension. The individual systems are connected, so that a drop in pressure, within the safety parameters, will affect all the systems, but a complete failure of the braking system will be prevented.

4.6.3. Parking Brake

The parking brake operates via compressed air, but is spring loaded and so is most effective when the amount of compressed air is minimal. **The brake will only be released when enough air pressure is applied via the parking brake lever.**

As a result, the parking brake will automatically engage when the pressure in the dedicated brake circuit is too low. This is a safety measure, as the parking brake is the only brake that can stop the bus if the air pressure is lost. Whenever you exit the bus, set the parking brake!

When the parking brake is engaged, the parking brake light (25) will light up, except for when the normal brakes are fully applied, since the effect of the parking brake will be reduced by a release valve as a safety precaution.

4.6.4. Electrical System

Turn on the electrical system by inserting the key (4) and then pressing the main battery switch (5). The IBIS startup chime will play and the lights and displays will come to life. The IBIS display will also be illuminated.

Don't forget – as long as the electrical system is engaged, it will run down the battery! When the engine is running and the charging light (28) is lit, the battery will charge.

To turn the electrical system off, pull out the key (4).

The 6D300 series, which ran until the 6D31, used the old style of yellow



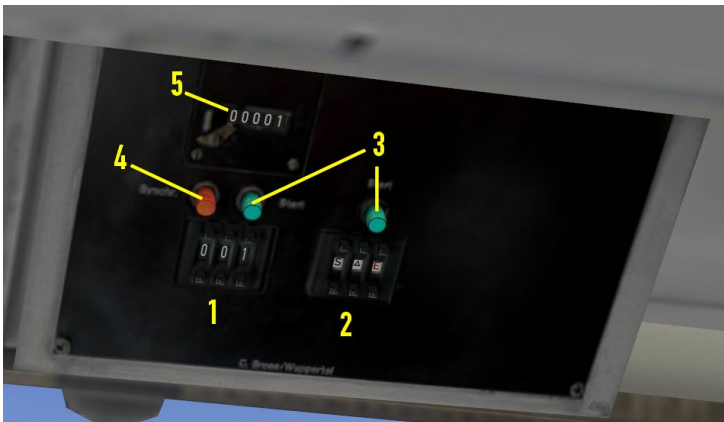
First press [F5], [F6] or [F7] to choose the first second or third number roll. Then hold [Page Up] or [Page Down] until the roller reaches the desired position.

The destination display, on the other hand, is controlled electrically, using the control unit described above. You can use the counter and the destination code table to determine which destination is currently being displayed. To change the destination, press the “Up” or “Down” key. You can also press [F8] once, and then [Page Up] or [Page Down]. The counter will jump forwards or backwards to the next number and the display will change. **The display can only be advanced again once it has stopped moving.**

In reality, sometimes the destinations on the front and side displays as well as the counter don't match up. In this case, you can press “Synchronize” to return all the displays to the 0 position. Set the counter to the zero position as well, and all the displays will again be in sync.

4.6.6. Destination Display Unit (new)

The SD83 series buses, which have the new type of destination displays, have a somewhat different control unit and thus the controls are a bit different from those of the older models.



- (1) Code for destination display
- (2) Code for route display
- (3) Start button for destination and route displays
- (4) "Synchronize" button
- (5) Destination display counter

These rollers are automatically configured. The controls are much less time-consuming than those for the old system:

If you want to change the destination display, enter the desired destination code with the "+" and "-" buttons on the unit and then press "Start". On the counter you'll see which destination is currently displayed. The same applies to the route display – just use the buttons on the unit to enter the number of your route. In addition to the numbers 0 through 9, there are some additional symbols:

- "Triangle": enter a triangle in all three fields and a triangle will be displayed, signifying a special route.
- "S": School bus ("Gretel" appears on the left, "Hansel" appears in the middle and the right is clear).
- "E": Shortened route
- Red "12E": for a long time in Berlin, there were two express bus routes with red numbers and destinations, the red 12E and the red 54E. The effort wasn't made to make all the numbers on the route display red, and, for reasons we won't go into here, the red 54E never made it into the display. Instead, it was indicated with a white 54 and a red E. In any event, the red 12E remained in the destination display of the SD83. In 1984, these routes ceased to exist, and the red destination blinds were removed from the display. However, the red numbers were kept.

4.6.7. IBIS

In 1989, the buses of Berlin were outfitted with IBIS (Integrated OnBoard Information System), which controlled not only the ticket validator on all buses but also the matrix display in all newer buses, starting with the SD82.

The features of the IBIS system are explained below, though we've limited the description to the features that are actually supported by OMSI.



- (1) Keypad – [Ctrl] + [Num 0] through [Num 9]
- (2) 0 – Time/Date – [Ctrl] + [Num 0]
- (3) Delete – [Ctrl] + [Num ,]
- (4) Enter – [Ctrl] + [Num Enter]
- (5) Route – [Ctrl] + [Num *]
- (6) Line/Course – [Ctrl] + [Num /]
- (7) Destination – [Ctrl] + [Num -]
- (8) Next Stop
- (9) Back (Mute)
- (10) Forward (Mute)

Setting the line:

Press the "Linie/Kurs" button. The display will show "LINIE/KURS:#####". Use the number pad to type in the code for the bus line and then press the "Enter" button. The code will appear on the display in the "Line/Course" area and the matrix display will change to the line number you've chosen.

The code for the bus line has two parts:

09210

The first three (green) digits, "092" in this case, are the line number, in this case, line 92. The final two (red) digits allow you to display special characters on the matrix. Refer to the table in the appendix for examples of the use of the last two digits. In general, you should always use "00" – the special characters require other combinations.

Example: If you want to enter X49, you should type in "04936" (you can omit the first 0).

If you just type in "136, line 136 won't be displayed – instead, you'll see "X1" (check the table in the appendix)! If you just want to see "136", you'll have to type in "13600".

If you want to clear the display, click the "Delete" button. If you just want to clear the digits that you typed in so far, just click on the "Line/Course" button again.

Setting the route:

Every route consists of a set of stops and belongs to a line.

Example: Line 92, Route 1 begins at the "Freudstr." Stop and ends at the last stop, "Stadtgrenze". Route 2 includes the same stops, but in reverse.

If you've got the line set (see above – only the first three digits are relevant; the special characters don't matter), press the "Route" button. The first line will change to "ROUTE:" and you can type in the route and confirm it with "Enter" or cancel the process as described above.



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Once you press the “Enter” button, the first bus stop will be activated and the relevant destination will be displayed. The matrix display will change the destination automatically. On a bus with a roller, this must be done manually. You’ll see the route and the destination code on the display.

Cycling through stops

When you press [Q], the clutch (loudspeaker key) or the IBIS “Next Stop” or “Forward (Mute)” buttons, the next stop will be selected and displayed. If the bus has an automatic announcement system, like the D92, the next stop will be announced, unless you’ve pressed “Forward (Mute)”.

Manually set destination

Sometimes you’ll want to set a destination that’s not directly on your chosen route, or that doesn’t belong to any route (like “Maintenance” or “School Bus”, etc.).

First, find the right three-digit code and press the “Ziel” button. The display will show “ZIEL:” and you can enter the code and then confirm it. The matrix display will change to reflect the new destination. You can see the destination code in the lower line.

The previous route will be saved and you can still cycle through the stops (for instance, when you only want to make a shortened trip that ends at a stop that doesn’t belong to any route).

Display date and time

If you’re not in the middle of entering a route or destination, press the “0” button. The upper line will show the current date and time in OMSI. The date and time will be displayed until the upper line is needed to display a stop or destination.

Display delay (D92 only)

The IBIS 2 system in the D92 can display the current status of the schedule. It’s accurate to a tenth of a minute and appears on the right edge of the display. A + means that you’re running late and a – means that you’re early.

4.6.8. Heater

The water coolant of the SD200 and SD202 is heated by the engine and is then used to heat the passenger area.

The front blower is under the front window. Depending on the position of the right lever (44), it will circulate heated fresh air (up), unheated fresh air (middle) or heated recycled air (down) through the interior. You can use the red lever, second from the left, to control the temperature and the slider (43) to determine the intensity.

In the passenger area, there are several heaters, which you can control with the switch (45). You cannot control the temperature.

The effectiveness of the heating system is dependent on the temperature of the coolant. To warm up the coolant on cold days, which on the one hand will get the bus ready to drive sooner and on the other hand makes the internal heating more effective, you can turn on the auxiliary heater (37).

The auxiliary heater only works until the coolant temperature reaches approx. 70 °C (158 °F).

Try to keep a comfortable interior temperature! And make sure that the passengers get enough air. The windows in the cabin or in the passenger area can be opened to let in some fresh air, and the heating system can also provide ventilation. Don't leave the doors open too long on cold days, though, or it will get too cold inside.

There's a small digital thermometer in the cabin so that you can keep track of the temperature.

4.6.9. Starting the Bus

1. Insert the key (4) and press the main battery switch (5) (except in the SD77/SD202)
2. Check if you've got power – the charging light (28) will remain lit until the generator is producing enough energy.
3. Check if the parking break is set (lever (3) and indicator light (25), except on the SD77)
4. Check if there's enough fuel (21)

5. Check if the bus is in neutral (no gear selected).
6. Start the engine with (6) or [M].
7. Check the oil pressure – it should be above 1 bar.
8. When the compressed air system has enough pressure (white pointer (19)) and the bus is otherwise ready, the “not ready to drive” light (23) will turn off and the pressure warning indicator will go down (18). If there’s not enough pressure yet, let the engine run a while longer. If there’s enough pressure but the warning light (23) still hasn’t gone out, then something else is wrong – you’ll need to talk to a mechanic at the depot! ;-)
9. When the bus is ready to go, program the IBIS system, set the rollers if necessary, and turn the interior lights and the low beams on if necessary.
10. Put the bus in gear (normally “3” or “D”) (9), check if the bus stop brake is still on (lever (10) pressed down) and release the parking brake. The bus will start to move.

4.6.10. Bus Stops

1. Brake to a full stop and steer the bus near the curb.
2. Set the bus stop brake (10). If a stop was requested, the rear doors will stay open until the last passenger has disembarked.
3. Open the front doors if necessary (11).
4. You can save fuel during a long stop by putting the bus in neutral (especially if you’re driving and old SD series bus) and setting the parking brake (3).
5. You can open the rear doors if necessary by using the baby carriage switch (13). It will take a few seconds before the rear doors close.
6. After all the passengers have gotten on or off, close the front doors (11), put the bus in gear, and deactivate the bus stop brake (1). Once the rear doors are closed, the bus stop brake will be released. If the parking brake is still set, release it, too.
7. The bus will start to move. You can continue driving.

4.6.11. Shutting Down the Bus

1. Set the parking brake (3) and put the bus in neutral (9).
2. Turn off all the fans (43, 45) and the auxiliary heater (37) and make sure that the passenger lighting (39), engine cooling system (47) and windshield wipers (42) are off and the driver and passenger windows are closed.
3. If you'd like to exit the bus, set the bus stop brake (10) and open the front doors (11). You can then release the bus stop brake.
4. Turn off the lights and take the key out (4). You can now exit the bus. You can close the front doors by clicking on the right maintenance opening next to the front door.



5.2. Start Menu

You'll see the start menu when you first start OMSI or when you click on this symbol.

You can change the current driver or review and update your personnel file. You can choose to load the last position on the selected map to the right. You can also choose to load the selected map without buses (it will load up with AI traffic and standard weather conditions). You can also load a saved situation by choosing the third option, "Load saved situation".

In the area below you'll see more information about the selected map or situation. You can confirm your selection by clicking on "Start!". To close the dialogue without making any changes, click on "Cancel". You can also quit OMSI, in which case your selections also won't be saved.





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5.3. Save Situation

You can save the current situation at any time. You'll see the following dialogue:

Name the situation and, if necessary, enter a description as well. If a situation with that name already exists, you'll be asked if you'd like to overwrite the existing situation or give the current situation a new name.



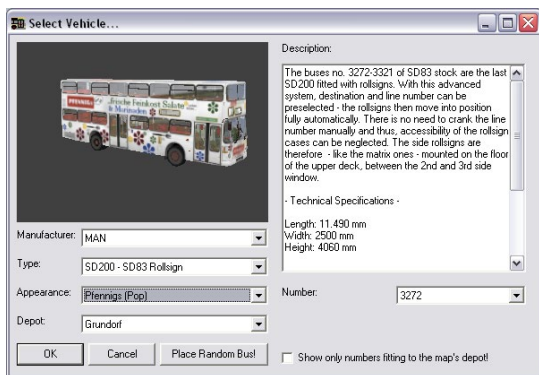
5.4. New Bus

Click on this symbol to add a new bus. This is only possible if you don't have an active timetable yet. If you have an active timetable, you'll have to quit it before you can add a new bus.

Note: Don't add too many buses to the map, as the refresh rate will become very low. The effect is especially noticeable when the buses are in the same area.

You'll see the following dialogue:

You can select the manufacturer, model and appearance of your bus.



You'll also have to select a depot, which will determine which destinations and stops are available to you. You'll have to make sure that you select a depot that's on the map you've chosen!

Finally, you can also set or select the bus number (if your bus is a city bus, in which case it will use a certain license plate number system) or the license plate number (if you're driving a private bus). You can only use bus numbers that aren't already in use.

If you're especially interested in realism, you can also check the box "Only display numbers for depots on the map". The only numbers available will be those that were actually in use in Spandau in 1989.

You'll find a lot of interesting information about the vehicle in the description.

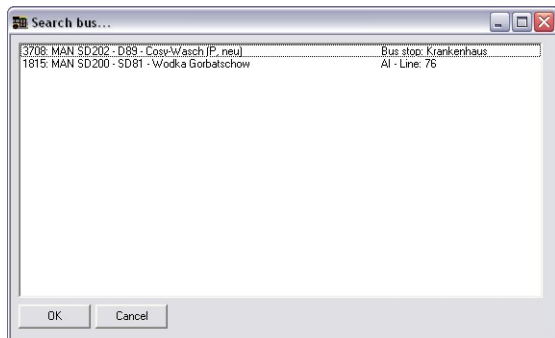
You can also click on "Random Bus!", which makes choosing easy – OMSI will select a bus that's appropriate for the map, with a suitable number and paint job.

After you click on "OK" or "Random Bus!", you'll see the "Set New Vehicle Position" dialogue (more info on that below).



5.5. Find Bus

You can view a list of available buses in the “Find Bus” dialogue, as long as you don’t have an active timetable (if you need to use this feature, you’ll have to quit your active timetable first). The dialogue looks like this:



First you’ll see the bus number (3272 und 3413), then the manufacturer and model “MAN SD200 – SD83” or “SD85” as well as the paint job (in this case, “Beige” and “Pfennigs (Pop)”. At the end you’ll see the location of the bus. Either it’s an AI bus, in which case you’ll see AI and the route that it’s on, or it’s your bus, in which case you’ll see the next bus stop, as long as it’s not too far away.

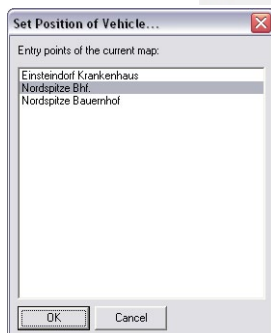
You can exit the dialogue without making any changes by clicking on “Cancel” or take over one of the buses by selecting it and clicking “OK”. Note: you should only switch buses if the bus you’re leaving is safely parked – it’s not a good idea to leave it driverless while it’s barreling down the road at 55 km/h!

5.6. Set New Vehicle Position



Click on this symbol to place the bus on one of the preset positions. This is also only possible when you don't have an active route. The same dialogue will pop up with the "New Bus" dialogue.

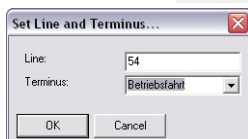
In general, there are always several alternatives for cases when the "normal" position of the bus is already occupied by another vehicle.



5.7. Set Route and Destination



This symbol will open the "Set Route and Destination" dialogue. This is an alternative to setting the route and destination display using the "real" controls on the bus, which can be time consuming. Just enter the route and then select the destination. As soon as you click "OK", the display on the bus will be updated.



5.8. Personnel File



The symbol will open your personnel file, which consists of at least two pages. On the first page, you'll find general data describing your driver as well as information about the routes that you've driven, the number of stops that you've reached, the number of tickets you've sold, and the total revenue. You'll also see how many accidents you've been involved in as well as an evaluation of your driving style and how you treat your passengers. Your driving is only evaluated when you have passengers on board.

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On the next page or pages, you'll find a detailed list of all the buses that you've driven.

Personnel File Page 1

Driver: John Doe

New Driver... Edit Driver... Delete Driver

Personnel File

Name: Mr. John Doe

Date of birth: 01.04.1964

Date of hire: 19.02.2007

Covered Distance: 0.0 km

Bus stops: 0

thereof too early: 0

thereof too late: 0

Sold Tickets: 0

Gains: 0.00

Crashes: 0

Abscondings: 0

thereof heavy: 0

Hurt pedestrians: 0

Rating Driving: 100.0 % (excellent)

Rating Ticket Selling: --

Rating Pass. Comfort: --

Close

Edit Driver...

Name: John Doe

Gender: ☐ female ☒ male

Date of Birth: 01.04.1964

OK Cancel

If you want to add a new profile or update the current profile, click on the appropriate buttons. You can set the name, gender and date of birth of the driver. If you double-click on the photo-symbol, you can upload your own photo.

5.9. Schedule



This symbol has two functions:

5.9.1. Select Schedule

If you don't have an active schedule (the symbol is not depressed), then you can click here to activate a schedule. You'll see the dialogue below.

Select the line you want to drive. Then you'll have to select a tour. As soon as you've selected a tour, the next possible departure will be suggested. You'll then be able to see when you need to begin. If the starting time or location isn't to your liking, you can just select a different tour with a better starting time or location.

A screenshot of the 'Set Time Table' dialog box in the OMSI simulator. The dialog has a title bar with a close button. It contains several fields: 'Line:' with a dropdown menu showing '76'; 'Tour:' with a dropdown menu showing '1'; 'Trip:' with an empty text field; 'Line Number:' with the value '76'; 'Terminus:' with the value 'Krankenhaus'; 'Start:' with 'Bauernhof' at '11:07:00'; 'End:' with 'Krankenhaus' at '11:14:00'; and 'First Stop:' with a dropdown menu showing 'Krankenhaus' at '11:13:59'. There is a checkbox labeled 'Driving as additional bus (AI bus will not be removed)' which is currently unchecked. At the bottom, there are 'OK' and 'Cancel' buttons, and a 'Current time:' field showing '10:58'.

Of course, you don't have to select the suggested trip. If you select an earlier trip which has already begun, you'll start out behind schedule. If you select a later trip, you'll have to either wait until it's time to begin or change the in-game time.

Finally, with the "First Stop" option, you can select another stop as your starting point. You don't necessarily have to begin at the official start or end point of the route.

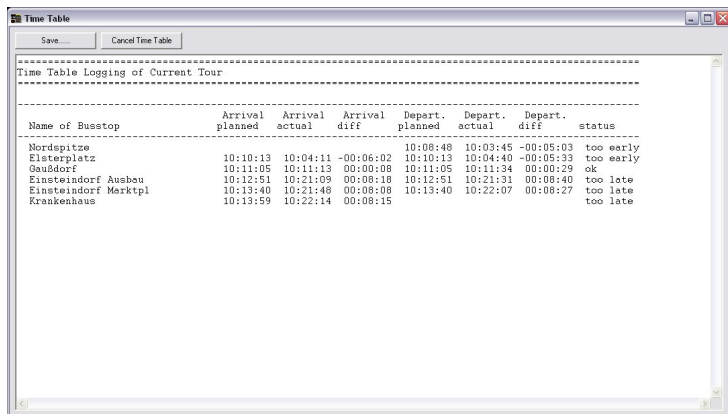
Normally, the "extra" AI bus will be taken out of service or just not sent into service. You can also drive the route with the normally scheduled AI bus if you click on "Driving as additional bus".

Note: If you've clicked on OK and thus activated the timetable, you can neither switch to a different bus nor place your bus at a new location. It is also no longer possible to set the time bus back (though you can still advance it).



5.9.2. Show schedule evaluation

If you've got an active schedule, the symbol will be depressed and you can view the schedule evaluation:



The screenshot shows a window titled "Time Table" with two buttons: "Save..." and "Cancel Time Table". Below the buttons is a section titled "Time Table Logging of Current Tour" which contains a table with the following data:

Name of Busstop	Arrival planned	Arrival actual	Arrival diff	Depart. planned	Depart. actual	Depart. diff	status
Nordspitze	10:10:13	10:04:11	-00:06:02	10:08:40	10:03:45	-00:05:03	too early
Elsterplatz	10:11:05	10:11:13	00:00:08	10:10:13	10:04:40	-00:05:33	too early
Gauddorf	10:12:51	10:21:09	00:08:18	10:11:05	10:11:34	00:00:29	ok
Einsteindorf Ausbau	10:13:40	10:21:48	00:08:08	10:12:51	10:21:31	00:08:40	too late
Einsteindorf Marktpl	10:13:59	10:22:14	00:08:15	10:13:40	10:22:07	00:08:27	too late
Krankenhaus							too late

You'll see a list detailing the stops, the planned arrival and departure times, the actual arrival and departure times, and the difference, as well as an indication of whether you were too late (three or more minutes late) or too early (two or more minutes too early), or whether you managed to arrive and depart within the acceptable timeframe.

You can also quit the current timetable by clicking on "Cancel Time Table". (Doing so has no negative effects on your evaluation). You can also save the evaluation as a text file by clicking on "Save...".

5.10. Set Date and Time



Click on this symbol to set the date and time in OMSI.

The time determines whether it will be day or night, how much traffic will be on the streets, how many passengers will be travelling, if lights will be on in the apartments (at 6:00pm) or if all the lights will be off (at 3:00 AM).

The date will determine the season, if it's a holiday or school vacation day, if it's a weekday or weekend and thus in what kind of rhythm the buses will depart, as well as the phase of the moon, position of the sun, and the positions of the stars.





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5.11. Weather



Click on this symbol to change the weather according to your wishes.

You have three choices:

Download real weather:

Check the "Real Weather" box and, if necessary, select a city, and the current weather conditions will be downloaded. As long as the box remains checked, the weather conditions in the game will be updated every five minutes based on the actual current weather conditions.

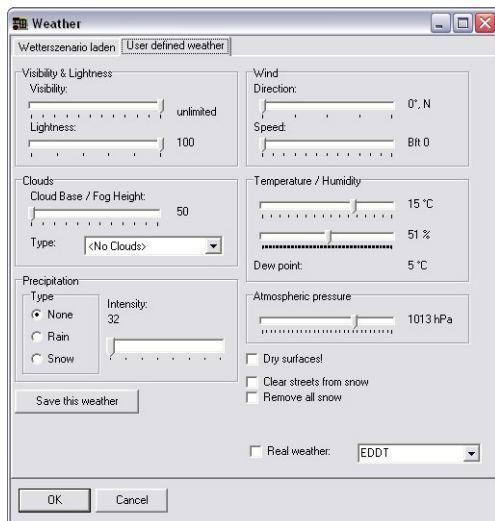
Load weather scenario:

Select a set of stored weather conditions and click on "OK". The weather conditions in OMSI will be updated automatically.



User defined weather:

You can set all the weather parameters as you see fit. Note that OMSI follows a certain logic – rain water will freeze when the temperature falls below 0 °C (32 °F), if you select snow, visibility will be reduced and you won't be able to set a temperature above 5 °C (32 °F). If it's cloudy, shadows are reduced or absent, and if the humidity is high, puddles won't dry.



By clicking on “Dry Surfaces”, “Clear streets from snow” and “Remove Snow”, you can automatically clear the results of the weather, but if it rains or snows again, you'll have to repeat the process.

You can also save the weather conditions that you've created.



aeroSOFT CLASSIC



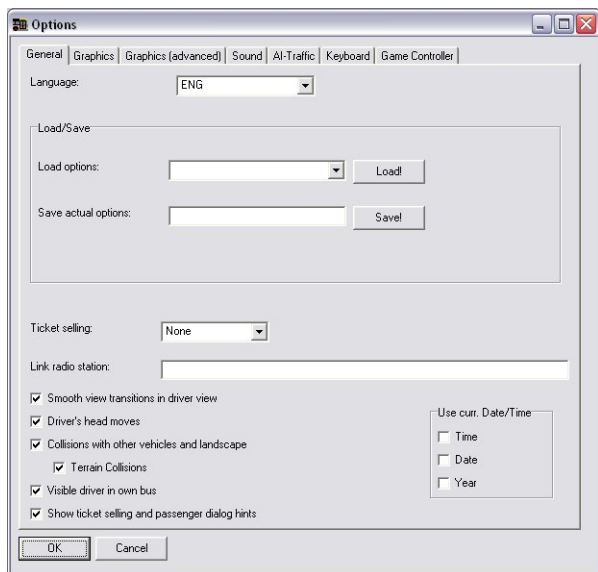
5.12. Options

In the options dialogue, you can view and change OMSI's settings, including the general settings, graphics, sound, traffic, input devices and keyboard settings. The various tabs in the options dialogue will be explained in the following sections. At the end, we've included a few suggestions for various types of PC.

On the first tab, "General", you can load a preset profile. We've attempted to customize the various parameters (especially the graphics) as sensibly as possible. We recommend using one of our preset profiles as the basis for any tinkering that you do. For easy reference (though it's just an estimation and your own experience may differ), we've configured our profiles based on several generations of typical PCs. It's just a rough guide, though, so you might find that the profile that best suits your system is based on a different year.

Select a profile ("Load Options:") and then click on "Load!". You can save your profile in the same way – give it a name and then click on "Save!".

5.12.1. General



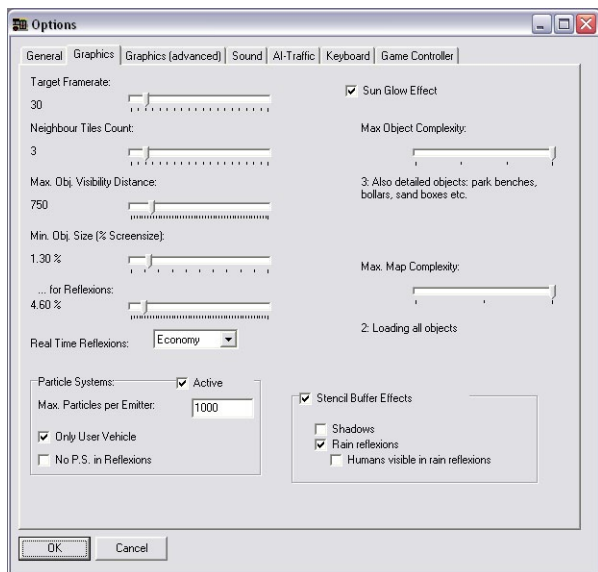
On this tab, besides saving and loading, you can control the following settings:

- **Language:** Set the language of the OMSI dialogues as well as info and warnings.
- **Ticket Sales:** If this option is activated and the bus is properly equipped, then passengers, according to a certain probability, will buy tickets when they board the bus. If you select "Advanced", the [T] and [Ctrl]+[T] shortcuts are locked.
- **Internet Radio Link:** If the bus is outfitted with a cassette player, radio, etc., you can enter a link to an internet radio station here. If you turn on the radio in the bus, the internet radio station will play.

- **Important:** The URL must be appropriate for this use. The player itself must be integrated in the website. OMSI cannot use a streaming URL (like what you'd use to listen to internet radio in iTunes or Windows Media Player). The player must start playing automatically when the website is opened.
- **Smooth view transitions in driver view:** You can determine if the transition between the perspectives in driver or passenger view shall be immediate or smooth.
- **Driver's Head Movement:** You can turn this option off if you're using TrackIR and want to disable the relative motion of the driver's head when accelerating.
- **Vehicle and Landscape Collisions:** Since collision detection can lower the refresh rate, you can turn this option off if it's not important to you. This does not include curb detection, which is always active.
- **Terrain Collisions** can be disabled separately, since they're only relevant in extreme situations, like if the bus rolls over.
- **Driver in Bus:** Just as in AI buses, you can see "yourself" in the driver's seat. If this option is deactivated, the driver's seat will be empty in external views.
- **Show Ticket Sales and Passenger Dialogue Info:** You can show or hide ticket sale and passenger dialogue if you don't want to see any text on the monitor.
- **Use Current Time:** OMSI can use the current system time, date and/or year when you start a new situation or continue playing a saved situation.

Suggested Settings: You should only activate ticket sales when you're really comfortable with the rest of the simulation. Otherwise, you'll just be annoyed by the requests for tickets. "Soft Transitions" don't require any additional system resources, but if the refresh rate is low, they may not look good. Collision detection does require additional system resources, so you should only activate it if your computer is powerful enough – or if you don't want to use the simulation without it, of course.

5.12.2. Graphics



On this tab, you can control the following graphics settings:

- **Target Refresh Rate:** In general, the refresh rate can be limited to 30 frames per second (FPS). This prevents the frame rate from increasing too much, which won't noticeably improve the graphical appearance of the simulation but which will still put a strain on the system, which will have a negative effect on the physics engine. In general, though, one usually has to worry about a frame rate that's too low rather than too high! ;-)
- **Number of Neighboring Tiles:** Many calculations are carried out on a tile-by-tile basis. A tile is a 300m by 300m "square" that contains scenery and objects. The OMSI world is built like a puzzle composed of these tiles. This option influences the number of "active" tiles. The larger the value, the farther away

it will be possible to display objects. The value 1 means that, in addition to the tile on which your bus is located, one tile in each direction will also be active (making a square of nine tiles). The value 2 means that two tiles in each direction will be active, making a total of 25 tiles in the square. The higher the value, the harder your computer will have to work.

- **Maximum Visibility:** Independently of the previous option, you can set the maximum distance (in meters) at which objects on the map are still visible.
- **Minimum Object Size:** As an additional restriction, you can specify that objects will only be visible if they meet or exceed the minimum size requirement, which is measured as a % of screen height. Only when all three of these criteria are met (object located on adjacent tile, object within maximum visibility area, object larger than minimum object size), will the object actually be displayed (and only then will it take up the required system resources).
- **Minimum Object Size for Reflections:** You set a different minimum object size for triggering reflections (rear-view mirror, in rain puddles, etc.).
- **Real-time Reflections:** You can determine how reflections on the rearview mirror will be displayed. "None" means that there will be no reflections. "Full" means that the reflections in all the rearview mirrors will be continuously updated. This requires the most system resources. "Economical" means that that only one rearview mirror will be updated at a time. This will consume fewer system resources, but the frame rate in the rearview mirrors will be noticeably lower. If there are three mirrors, then each mirror will have a frame rate that is 1/3 of the frame rate used in the rest of the simulation.
- **Particle System:** This controls the representation of rain, snow and smoke. You can activate or deactivate this entirely with the "active" option. If you'd like to have some particle systems present, but want to conserve system resources, you can limit the maximum number of particles included in each system, as

well as turn off the representation of exhaust on AI vehicles ("Only my vehicle") or in rearview mirrors ("No PS in reflections").

- **Sun Effects:** Portraying sunlight requires some system resources and can be deactivated if necessary.
- **Maximum Object Complexity:** The lower the setting, the fewer the number of map objects that will be calculated and displayed. It conserves system resources, but it also lowers the depth of detail of the map.
- **Max. Map Complexity:** You can set the depth of detail of the map. At the lowest setting, only objects that are directly on the main route will be loaded. The higher the setting, the more objects will be loaded, and the more system resources will be required.
- **Stencil Buffer Effects:** Not all graphics cards support the so-called stencil buffer, which is necessary for shadow and rain/water effects. Both effects can also be individually configured. Keep in mind that both effects require significant system resources, which can lower overall performance.

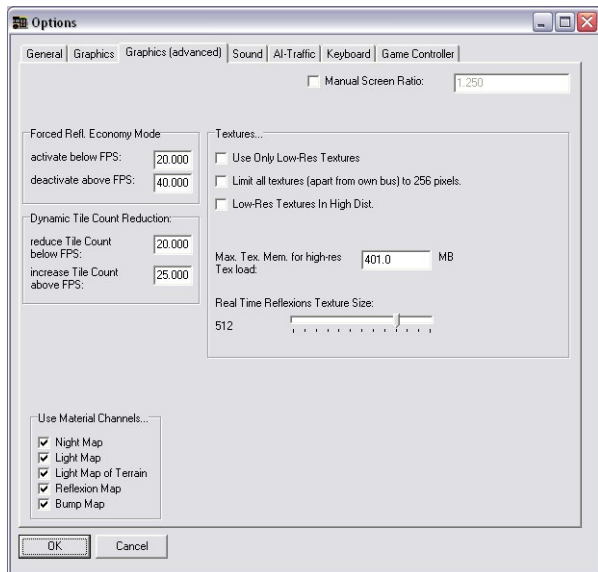
Suggested Settings: On slower PCs, only one adjacent tile in each direction should be active and real-time reflections should be turned off or, at most, set to economical mode. Particle system and stencil buffer effects should also be turned off. You can then experiment with the maximum object complexity and maximum map complexity to find the best settings for your computer.

Only if you've got a very fast PC should you activate the stencil buffer effects. Three adjacent tiles would also make sense here, and we recommend a minimum object size of 1-2%. Real-time reflections can be set to "full", since automatic reduction (see the next tab) will come into play if necessary. The sun effects also require some system resources.

If you activate the particle systems, then 100 particles on average PCs and 1000 on fast PCs are recommended.

Rain effects are very resource-intensive and should only be activated on fast PCs – all the same, it can't hurt to test them. "People visible in puddles" shouldn't be necessary, though...

5.12.3. Graphics (advanced)



On this tab, you can configure additional, more detailed graphics settings.

- **Forced Economical Reflections Mode:** The goal of this mode is to employ “full” reflections only when there are enough resources available. As soon as the FPS drops below the first of the two values here, the reflection mode switches to “economical”. OMSI will change back to “full” if the FPS meets or exceeds the second value OMSI will change back to “full” if the FPS meets or exceeds the second value. This function requires that the real time reflexions on the Graphics tab are set to “Full”.
The two values shouldn’t be too close to one another, otherwise OMSI will continually switch between the two modes.

- **Dynamic Tile Reduction:** The same idea is at work here – if the FPS drops below the first value, the number of active tiles will be reduced and only increased back to the original number once the FPS again meets or exceeds the second value.
- **Use Material Channels:** Some older graphics cards can cause graphical problems like false textures, “chromed” buses, etc. With this option, individual graphical effects can be deactivated, like night, reflections, textures, etc. In general, though, this should not be necessary and all channels should be active.
- **Manual Aspect Ratio:** If the physical (in cm) aspect ratio differs from the graphical (in pixels) aspect ratio, you can manually configure them here.
Ex.: If a 16:9 display is used in 1280 x 1024 (5:4 aspect ratio), then the aspect ratio 16:9 (=1.666) should be used here – otherwise, the onscreen image will be too wide.
- **Textures:** There are several settings that you can configure that determine how textures will be handled.
 - If you activate **Only Low-Res Textures**, loading time and memory usage will be drastically reduced. At the same time, low-res textures must be available, which is not always the case.
 - You can also conserve memory by activating **Limit All Textures to 256 Pixels**, which will prevent OMSI from loading textures that are larger than 256 x 256 pixels (except for your own bus).
 - Low-Res Textures for Distant Objects represents an additional variation – the low-res textures will only be used for objects that are located a certain distance away from the camera. The maximum texture size will also be limited 256 pixels.

- o If **Low-Res for Distant Textures** is activated, the value (MB) will serve as the limit for loading high-res textures. Once the total memory usage for active textures reaches the limit, low-res textures will be used for all objects, including those that are near the camera. We recommend setting the limit at approx. 80% of your graphics card's RAM.
- o You can use **Real-time Texture Size** to control the resolution of textures in the rearview mirrors.

Suggested Settings: For most PCs, the default values should be fine.

The "Textures" group is important, though:

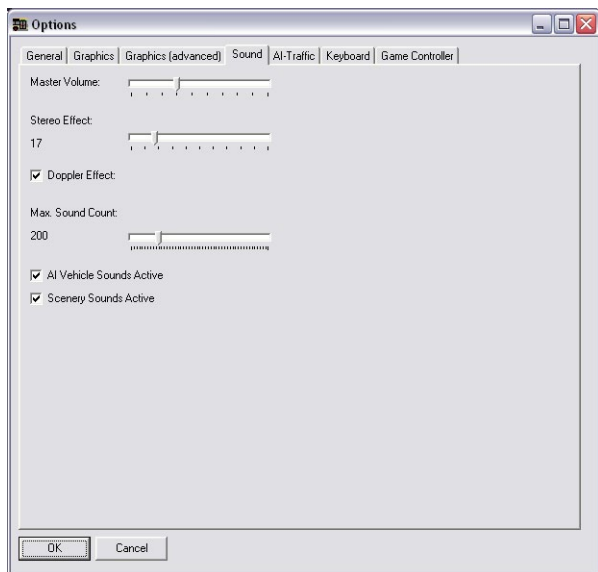
If your graphics card has relatively little RAM, we recommend activating "Limit All Textures to 256 Pixels".

On a low-end or mid-range PC, we recommend activating "Only Low-Res Textures" and "Lo-Res Textures for Distant Objects". If you've got a high-end PC, you should be able to deactivate "Only Low-Res Textures".

The "Low-Res Textures for Distant Objects" option can result in shaky images when the high-res textures are loaded. If that bothers you, you should deactivate the option.

If you deactivate all three options, all objects, even those that are far away from the camera, will have high-res textures. We only recommend this if your video card has enough video RAM.

5.12.4. Sound



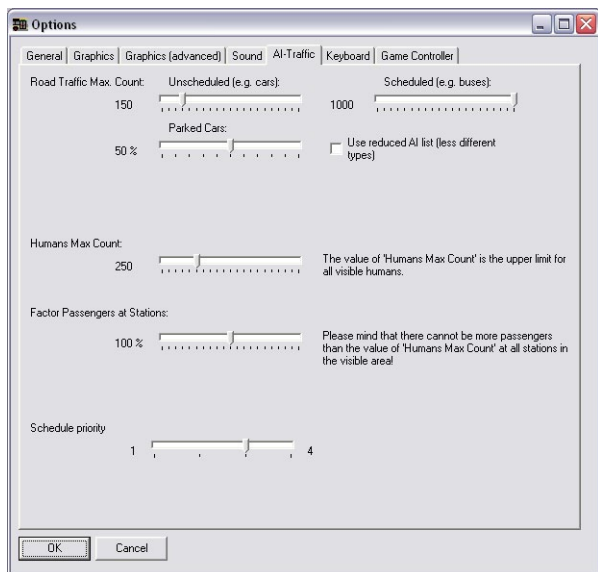
You can configure the following sound settings in OMSI:

- **Volume** sets the volume of all sound effects in OMSI.
- **Stereo Effect:** Perception of stereo sound depends on the correct placement of speakers or the use of headphones. You can compensate for speaker placement that's not optimal by shifting the sound effects to the left or right. At 0, all sounds, regardless of where they originate, will be equally loud in the left and right channels. At 100, a noise that originates from the left will only sound in the left channel. In general, you can set the value high if you're using speakers, but you should leave it low for headphones, since the left ear will only hear the left channel anyway.

- **Doppler Effect:** This is the effect that you've noticed when listening to fire engines or Formula 1 races – the sound of objects approaching you seems to have a higher frequency than the sound of objects moving away from you. Since this effect is not very noticeable until the object reaches 50 km/h, you can safely turn this option off and conserve some system resources.
- **Maximum Sound Quantity:** The fewer the sounds that have to be calculated, the fewer the resources OMSI will need. The sounds of distant objects will be deactivated, which can make the effect more noticeable.
- The options **Other Vehicle Sounds** and **Scenery Sounds** allow you to configure whether other vehicles or the surrounding scenery will have sound effects or not.

Suggested Settings: The default settings are appropriate for a good PC. If your PC is more mid-range, you should deactivate the sound effects for other vehicles and for the scenery. You can also deactivate the Doppler Effect. You can also deactivate the stereo effect (set it to 0), but the simulation won't sound as good! ;-). The volume has no effect on performance, though if it's set to 100%, you may hear some artifacts (for example, when accelerating hard from the rear-bench view) – in that case, you can just dial the volume down a bit.

5.12.5. Traffic



You can configure the quantity and type of AI (artificial intelligence) traffic. It's important to note that AI traffic requires a relatively large amount of system resources. The vehicles must monitor their own positions as well as those of the other vehicles; the same goes for the pedestrians.

- **Street Traffic:** Determine how many unscheduled (cars and trucks, etc.) and how many scheduled (buses) vehicles should be represented.
- The **scheduled vehicles** are also controlled by the scheduling priority, so the "Scheduled" value can safely be left at 1000. At the same time, the scheduled vehicles are often much more detailed (both in terms of graphics and sound effects) and so by setting a lower value, you can conserve system resources.
- **Parked Autos:** You can configure the percentage of occupied parking spaces.

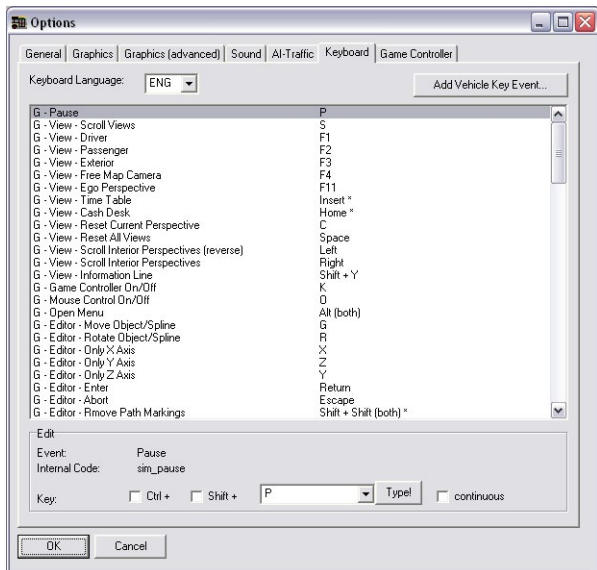
- **Use Reduced AI List:** This will limit the variety of AI vehicles. This is another way to conserve system resources, since OMSI will have to keep track of fewer types of vehicles.
- **People:** You can set the upper limit of the number of people (pedestrians and passengers) in the simulation.
- **Passengers at Stops:** The number of passengers waiting at bus stops is usually determined by the date and time of the scheduled departure, as well as the configuration of the stop itself. With this option, you can raise or lower the number of waiting passengers manually. (And of course, no matter what factor you choose, there can never be more passengers at a stop than the number of people set in the “People” option above.
- **Scheduled Vehicle Priority:** You can limit scheduled vehicle traffic. 1 means only the “intended” route will be equipped with AI vehicles. If 2 is selected, all the parallel routes will also have AI vehicles serving them. If 3 is selected, all the routes will have AI vehicles. If 4 is selected, AI vehicles will serve additional routes as well.

Suggested Settings: The default settings are recommended for good PCs. We only recommend activating all scheduled traffic (setting 3 or 4) on a high-performance PC, since they are more complex than “normal” cars. We don’t recommend more than 200-300 people – the same goes for unscheduled vehicles. The percentage of parked autos isn’t really relevant to performance – it’s more of a matter of taste! ;-)

On a slower PC, the decision is more difficult. No one wants to drive without other vehicles, buses or passengers, but all three require significant system resources. Our recommendation is to activate a little of each, but to restrict the number of scheduled vehicles to 1-5 and if necessary, reduce the number of autos and people too.

The number of passengers waiting at the bus stops has very little influence on performance, since the total number of people in the simulation is already limited by the People setting.

5.12.6. Keyboard



You can change the keyboard shortcuts controlling the program as well as your bus.

First, you can set the keyboard language. It automatically adopts the general language settings.

To change a keyboard shortcut, you just have to click on the shortcut in the list and type the new shortcut in the field below.

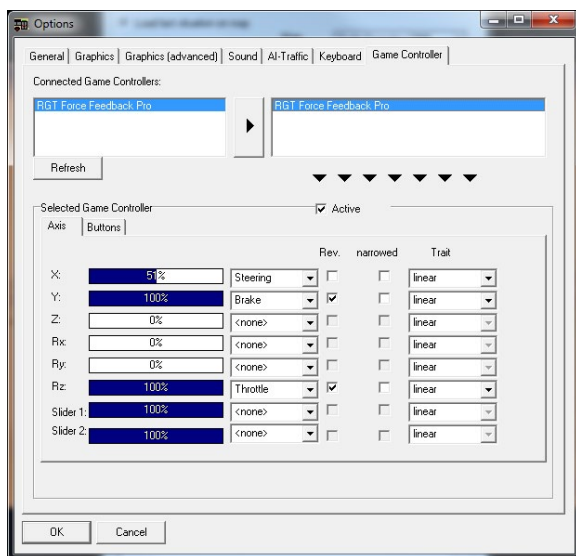
If you click on "Type!" and then press a key, the key will be recorded automatically. (This does not work for all combinations of keys.)

The "continuous" field is no longer used.



Add Vehicle Key Event will allow you to select an event from a list of actions that covers all possible actions for all installed vehicles. Once you confirm your selection by clicking “OK”, the action will be added to the end of the list, without a shortcut. You can add a shortcut using the method explained above.

5.12.7. Game Controller



These settings apply to all so-called Game Controllers recognized by Windows, whether they're joysticks, steering wheels or gamepads, etc. On this tab, you can configure them for use with OMSI.

After you've first installed OMSI, there's usually no controller configured. The first step, therefore, is to select your controller of choice from the list of active controllers on the upper left. You can update the list at any time.

Click on the large button with the right-arrow to add your controller to the list of OMSI controllers.

Now it's time to configure the controls for OMSI. Select your controller from the list on the right and you'll see the settings that can be changed in the area below the two lists.

Active determines whether the selected controller will be used to control OMSI. You don't need to disconnect a controller if you don't want to use it – you can just deactivate it here.

On the **Axis** tab, you'll find the following fields:

- A display indicating the current position. You can check here to determine which physical axis the controller is controlling.
- Next, you'll need to map these to the OMSI controls. In addition to steering, gas, brake, and clutch (or the radio button), there's also the gas/brake combo, which you should use if you're using a joystick or similar controller and you want to accelerate by pressing forward and brake by pulling back.
- **Rev** enables you to invert the control axis, which may or may not be necessary for your controller.
- **Narrow** restricts the range of action. For example, an older controller may not allow you to "press" on the gas pedal more than 95% in normal mode. With this option, you can reconfigure the relationship, so that 90% input on the controller is equal to 100% input in OMSI.
- **Characteristics:** You can choose between various transmission characteristics:
 - **Linear** entails a 1:1 transmission.
 - **Progressive** means that the ratio is weaker in the lower area and higher in the upper area, compared to the linear setting.
 - **Regressive** is the opposite of "Progressive".
 - **Bi-Progressive and Bi-Regressive** are for the "bi-directional axes", like steering (left/right) and gas/brake. The default value is 50%. You can set a progressive or regressive ratio in both directions.



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On the **Buttons tab**, you can configure the buttons on your controller:

- On the left you'll find a list of button mappings. Only the buttons that have been configured will be displayed. You can press a button on your controller to add it to the list.
- **Condition** will tell you if the button is the one that you're pressing.
- **Ident** shows the event that the button maps to. In this list, you'll see a list of all the program and vehicle commands for the vehicles that are currently installed. Choose a command from the list to map it to the button on your controller.

6. Credits

We'd like to thank the following companies for their support:

- MAN Truck & Bus AG, Munich
- Berliner Verkehrsbetriebe (BVG)
- Traditionsbus GmbH Berlin (ATB)
- BCT Berlin City Tour GmbH
- Berliner Volksbank eG
- BFB BestMedia4Berlin GmbH, Berlin
- COSY-WASCH Autoservice Betriebe GmbH, Berlin
- Europahaus Grundstücksgesellschaft mbH & Co. KG, Berlin
- Gorbatschow Wodka KG, Berlin
- Hartmann Schuhhaus Orthopädie GmbH, Berlin
- IDEAL Lebensversicherung a.G., Berlin
- Ihr Platz GmbH + Co. KG, Osnabrück
- LBS Norddeutsche Landesbausparkasse, Hannover
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- Radeberger Gruppe KG, c/o Berliner-Kindl-Schultheiss-Brauerei
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Source for Deutsch Mark bills and coins: Deutsche Bundesbank, Frankfurt

Special thanks to our tireless beta testers:

- Alexander Heller
- Peter Koops
- Frank Kläwike
- Rolf Westphalen

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We'd also like to thank all those who supported us with photo, sound and video content.

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Appendix


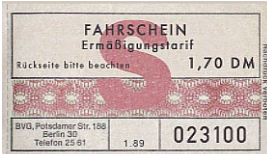



Traffic Signals

In Spandau you'll find special traffic signals that regulate bus traffic. Below you'll see examples of the signals and their meanings.

Signal	Meaning
	Stop
	Stop/Go Transition
	Go (If the line is vertical, you're permitted to drive straight ahead. If the line is diagonal, you are permitted to proceed in the direction that the line tilts.)
	Bus Registered: The bus has successfully made contact with the traffic signal and the signal will change accordingly

Tickets

In our buses, you can sell five types of ticket. Pay attention to the color-coding as well as the underlined letters – they'll help you quickly find the correct ticket.

 <p>FAHRSCHEIN Rückseite bitte beachten 2,70 DM BVG, Potsdamer Str. 188 Berlin 30 Telefon 25 61 1.89 030400</p>	<p>Normal (Transfer permitted) Ticket Machine: „Fs Norm“</p>	<p>DM 2,70</p>
 <p>FAHRSCHEIN Ermäßigungstarif Rückseite bitte beachten 1,70 DM BVG, Potsdamer Str. 188 Berlin 30 Telefon 25 61 1.89 023100</p>	<p>Student/Reduced (Transfer permitted) Ticket Machine: „Fs Erm“</p>	<p>DM 1,70</p>
 <p>FAHRSCHEIN-KURZSTRECKE Rückseite bitte beachten 1,70 DM BVG, Potsdamer Str. 188 Berlin 30 Telefon 25 61 1.89 085200</p>	<p>Short Haul Ticket Machine: „Kurzstrecke“</p>	<p>DM 1,70</p>
 <p>FAHRSCHEIN-KURZSTRECKE Ermäßigungstarif Rückseite bitte beachten 1,20 DM BVG, Potsdamer Str. 188 Berlin 30 Telefon 25 61 1.89 086200</p>	<p>Student/Reduced Short Haul Ticket Machine: „Kurzstr Erm“</p>	<p>DM 1,20</p>
 <p>TAGESKARTE Rückseite bitte beachten 9,00 DM BVG, Potsdamer Str. 188 Berlin 30 Telefon 25 61 1.89 001800</p>	<p>1-Day Ticket Ticket Machine: „Tagesk Nor“</p>	<p>DM 9,00</p>



Important Destination Codes

The following tables will come in handy as a quick reference for the important destination codes you'll encounter on your routes.

Berlin-Spandau

Roller	Matrix	Destination
1	206	School Bus
2	205	Special
4	049	Driving School
6, 36, 66, 96, 116	013	Maintenance
5, 37, 63, 92, 114	223	Spandau Autobus Depot
47	081	Heerstr., Stadtgrenze
48	210	Spandau, Freudstr.
49	007	U-Bhf. Altstadt Spandau
50	079	Heerstr. E. Reimerweg
51	214	Spandau, Am Kiesteich
52	212	Spandau, Westerwaldstr.
53	211	U-Bhf. Rathaus Spandau

Grundorf

Roller	Matrix	Destination
0	000	Leerfeld
1	013	Maintenance
2	206	School Bus
6	105	Einsteinendorf, Hospital
8	107	Nordspitze Bauernhof
9	108	Nordspitze, Train Station

Line/Course for Matrix Displays

The following tables explain what the MAN SD200/202 matrix readouts display based on line/course inputs. The table assumes that the value 123## is inputted in IBIS as "Line/Course", where ## is to be replaced with the respective "No.":

No.	Display	No.	Display	No.	Display	No.	Display
00	123	10	23E	25	_U3	35	N23
01	E23	11	_D3	26	U23	36	X23
02	"Triangle"	12	_C3	27	_M3	97	Software Version
03	"School Bus"	13	_B3	28	M23	98	Chessboard Switch
04	23N	14	_A3	29	BVG	99	All In / All Out Switch
05	S23	15	_N3	30	23S		
06	A23	23	_S3	31	23U		
09	_E3	24	S23	32	23M		

Routes

The following routes are included with the buses:

Depot Spandau

Line	From	To	Line/Course	Route
13N	U Rathaus Spandau	Stadtgrenze	91300	01
13N	Stadtgrenze	U Rathaus Spandau	91300	02
92	Freudstr.	Stadtgrenze	09200	01
92	Stadtgrenze	Freudstr.	09200	02
92	Freudstr.	Reimerweg	09200	03
92	Reimerweg	Freudstr.	09200	04
92E	Freudstr.	U Rathaus Spandau	09210	05
92E	U Rathaus Spandau	Freudstr.	09210	06
92E	Westerwaldstr.	U Rathaus Spandau	09210	07
92E	U Rathaus Spandau	Westerwaldstr.	09210	08
92E	U Rathaus Spandau	Stadtgrenze	09210	09
92E	Stadtgrenze	U Rathaus Spandau	09210	10
92E	U Rathaus Spandau	Reimerweg	09210	11
92E	Reimerweg	U Rathaus Spandau	09210	12

Key assignments

Pause	P
Open menu	Alt
Views	S
Driver view	F1
Passenger view	F2
External view	F3
Free map camera	F4
Schedule view	Insert
Ticket counter view	Pos 1
Reset view	C
Reset all views	Space
Scroll views	Arrow left/ Arrow right
Scroll information line	Shift + Z
Steering wheel / Joystick on/off	K
Mouse control activate/deactivate	O
Accelerate	Num 8
Brake	Num 2
Accelerate up / Brake slow release	Num +
Clutch	Tab
Steer left	Num 4
Center steering wheel	Num 5
Steer right	Num 6
Parking brake on/off	Period [.]
Bus stop brake + door release	Num -

Bus stop brake without door release (only D92)	Scroll lock
Indicator left	Num 7
Indicator right	Num 9
Indicator off	Num .
Warning lights on/off	B
Dim light on/off	L
Parking light on/off	Shift + L
High beam / flash light	F
Passenger area lights bottom right on/off	7
Passenger area lights upper deck on/off	8
Passenger area lights lower deck on/off	9
Drivers light	6
Electrics on/off	E
Engine on/off	M
Horn	H
Microphone switch (announcements)	Q
Automatic transmission: reverse	R
Automatic transmission: neutral	N
Automatic transmission: 1	1
Automatic transmission: 2	2
Automatic transmission: D/3	D
Front door 1. Door wing open/close	Num /
Front door 2. Door wing open/close	Num *
Issue ticket	T



Give change	Ctrl + T
Wipers continuous	W
Wipers interval	Shift + W
Windscreen washer	Ctrl + W
Select display 1	F5
Select display 2	F6
Select display 3	F7
Select destination display	F8
Move up selected display	Page up
Move down selected display	Page down
IBIS: Enter	Ctrl + Num Enter
IBIS: 0...9	Ctrl + Num 0 ... Num 9
IBIS: Delete	Ctrl + Num . (Del)
IBIS: Line/course	Ctrl + Num *
IBIS: Route	Ctrl + Num /
IBIS: Destination	Ctrl + Num -
Money change lower row	Ctrl + 5, 6, 7, 8, 9, 0
Money change upper row	Ctrl + Shift + 5, 6, 7, 8, 9, 0