

# **Metrosimulator**

**Version 0.5b3**

**Beta 3.5**

# Index

Introduction.....	3
Configuration.....	3
Loading route.....	3
Inserting train.....	4
Consist bar.....	4
Rolling stock.....	5
Type MG2.....	5
Type SG2.....	5
Type RSG2.....	5
Working trains.....	6
Controlling.....	7
Train protection.....	8
ATB.....	8
ZUB.....	9
Activities.....	11
Decouple.....	11
Timetable.....	12
Train yards.....	13
Shunting.....	13
Traffic control.....	14
Routes.....	14
Train numbers.....	14
Junctions.....	15
Legal notices.....	16

# Introduction

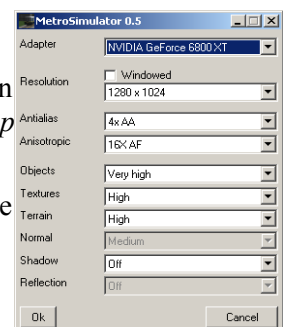
Welcome to the newest beta version of this simulator. The version is known as a beta 3 add-on and carries the version number beta 3.5. This is due to the fact that this release was added between the already released beta 3 and planned beta 4. The reason for this new release is to test a larger route with more trains, something that is important for the next beta.

Because of the number of changes, the new release is not compatible with the beta 3 route anymore, and is therefore released as a stand-alone version. It has most of the things from the previous version included however, as well as some stuff that didn't make it into beta 3. At the moment there aren't many activities available yet, but more are planned to be released later, so check back in a bit. If you are new to this simulator please check the tutorial first.

## Configuration

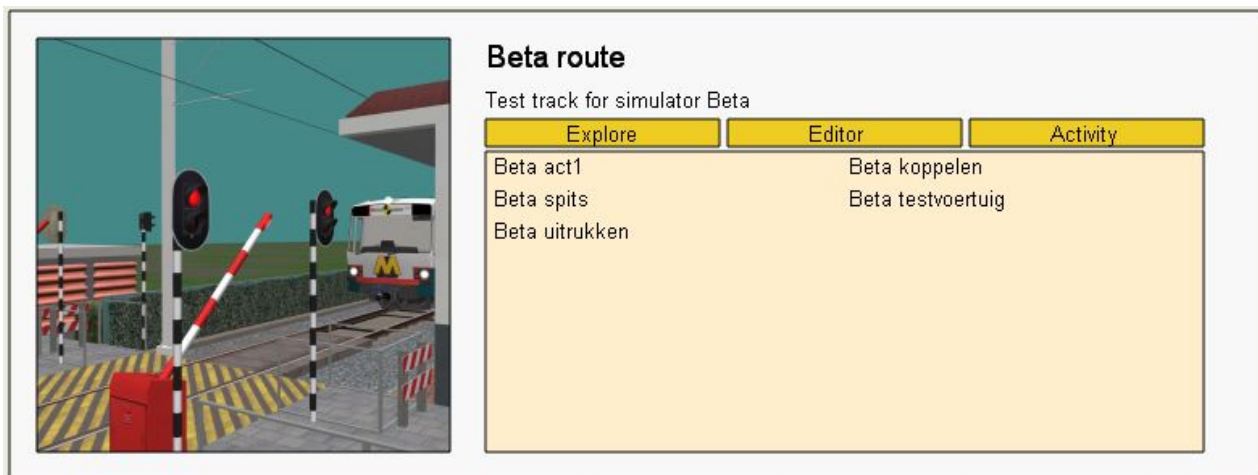
The first time the game is started, a configuration dialog will appear. The dialog can be opened again later to change the settings by starting the program with the `/setup` option, a shortcut is provided for this when you used the installer.

In this dialog you can select screen resolution and a few other settings. Not all of the settings actually work in this beta.



## Loading route

After starting the game, the main menu will be visible. In this menu all routes are displayed. You can click a route to select it. Besides the picture there are buttons to start the game.



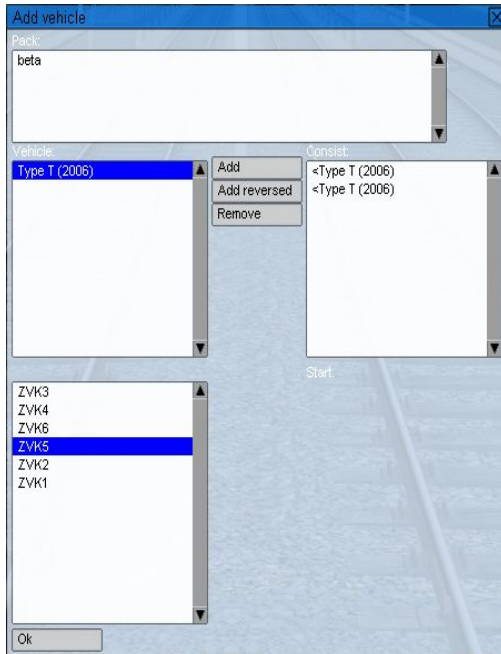
The button *Explore* is always available, this starts the route without any trains or timetables for free exploring of the route. The *Editor* button is only available when you have the source files of the route, this is not available with the beta route. Finally, when one or more activities are found, the *Activity* button is available. To load an activity, you first have to select one from the list.

On the top right there are 2 more buttons. The first one allows you to choose between *Player mode* and *AI mode*. This works in combination with activities. In AI mode, all trains are driven by the AI, allowing you to take the place of traffic controller, or drive around with a train from the train yard while the AI provides the necessary traffic.

Finally, second button allows you to choose between *Realistic mode* and *Arcade mode*. This function sets the difficulty and realism of coupling and shunting trains. In arcade mode, coupling and shunting is easier, but less realistic.

## Inserting train

While in *activity* mode all trains are ready when the activity loads, in *explore* mode you have to create the trains yourself. This can be done through the menu at the top by clicking *Vehicle->Add*, or via the dock on the left through this icon:



In the window that appears, choose the vehicle in the left on the left and press *Add* to add this to your consist. Pressing add multiple times will give you multiple units.

After this, choose a starting point on the left. You can press F1 to open the traffic control window to view all tracks, hold your mouse over a track to see the name of it. Start points usually have the same name as the platform. Finally, press *Ok* to create the train.

**Important:** the beta does not yet check if the track is free, be careful not to place 2 trains at the same start point.

## Consist bar

At the bottom of the screen you will find the consist bar. This bar hides automatically, move the mouse to the bottom of the screen to open it. This bar shows all vehicles in a consist. The buttons on the left allow you to scroll between all consists. The arrows scroll to the next or previous consist, while the middle button selects the current consist (the one you are controlling).

You can choose a train by clicking on the cabin, this will bring you to the cabin of that train. You can also change some settings of the trains. For this, right-click on the train to open the menu. In the menu you can disable functions like door control, power or brakes. By right-clicking on the coupler, you can disable the electric couplers from opening when you couple a train at the front or end of the train, or decouple the train when clicking a coupler in the middle of the consist.



Above the trains in the consist bar icons show the status of each train. When you disable a certain function of a train, the icon will appear. Also a yellow warning icon will appear when the brakes of that train cannot be controlled from the current cab and are currently applied. In that situation, in order to drive, you have to disable the brakes of that train, or check the couplers. Driving with disabled brakes will result in reduced braking power.

## Rolling stock

The third beta contains several types of trains and cars. The different trains are shortly introduced below.

### Type MG2



#### Series

5001 – 5027, 5051 – 5066  
5101 – 5126, 5151 – 5152

#### Description

The original rolling stock that served the Rotterdam metro between 1968 and 2002. These vehicles can only run on third rail and cannot be used with overhead wire.

The vehicles are 29 meters long and have 2 cabins. They can be coupled with trains in the 5200 series.

In this beta these trains do not have a working cabin.

### Type SG2



#### Series

5202 – 5228, 5230 – 5260

#### Description

These vehicles were built between 1980 and 1984 and are still in use in Rotterdam. There were 71 vehicles, 11 of these were reconstructed to type RSG2 and 2 vehicles were destroyed in fire, leaving 58 vehicles remaining.

The vehicles are 29,8 meters long with 2 cabins, and can be used both with third rail and overhead wire.

Both in real life and in the simulator, some vehicles have advertisements on the train doors.

### Type RSG2



#### Series

5260 - 5271

#### Description





Type RSG2 consists of old SG2 vehicles, reconstructed between 2005 and 2006 for use on the RandstadRail network between 2006 and 2009. They are no longer in service in real life.

Besides different coloring, these vehicles also have a different train protection system, and are missing 2 of the 4 third rail shoes, which results in these vehicles being gapped more often in this rail use.

## Working trains



### Series

6101

### Description

This diesel locomotive in use in Rotterdam has automatic couplers that allow it to couple with the 5000, 5100 and 5200 series. This locomotive does not have an automatic train protection system.

In real life there are 4 locomotives, this beta features only one. This train does not have a cabin yet.



### Series

7011 – 7016, 7101, 7201

### Description

These cars are being used for maintenance on the network. They do not have a special function in this beta, although they can be used when shunting trains with disabled brakes for extra braking power.

## Controlling

Controlling the trains is (at the moment) done using the keyboard only. To control a train, you must first navigate to the cabin. This can be done using the consist bar, or using the arrow keys up and down while pressing the ctrl key. To choose a cabin, you can use the buttons 1 and 2. The locomotive has only 1 cab, the buttons 1 and 2 can be used to look in the different direction, but the driving direction has to be set using the control lever.

Driving			
< >	Throttle front/back	/	Emergency brake (SG2 and RSG2 only)
Ctrl + L	Emergency button (SG2 and RSG2 only), allows use of track brakes on third rail mode.		
Ctrl + F4	Switch cab on	Q	Control lever left (driving direction etc.)
Shift + F4	Switch cab off	W	Control lever right (driving direction etc.)
Enter	Horn	Shift+O	Decouple
Power control			
Ctrl + P	Raise pantograph (SG2, RSG2)	Ctrl + I	Raise third rail shoes
Shift + P	Lower pantograph (SG2, RSG2)	Shift + I	Lower third rail shoes
Door control			
Insert	Unlock doors left	Delete	Open doors left
Home	Unlock doors right	End	Open doors right
D	Close doors	Ctrl+Shift+D	Disable door protection
Train protection			
~	Confirm buzzer (MG2, SG2)	Ctrl + TAB	Drive on sight (RSG2)
Ctrl+Shift+A	Disable automatic train protection		
Overige functions			
[	Turn signal left	/	Destination sign up
]	Turn signal right	*	Destination sign down
\	Alarm lights		

The control lever with the MG2, SG2 en RSG2 types has the following options:

PZ	Full power
S/P	Half power
R	Shunting mode
Ra	Shunting reverse
S/Pa	Half power reverse

Finally, there are following controls, not directly related to controlling the train











1	Camera cabin 1	F1	Traffic control
2	Camera cabin 2	F2	Traffic control console
3	Outside camera	Ctrl+PageUp	Increase simulation speed
9	Free camera	Ctrl+PageDn	Decrease simulation speed
Arrows	Move (free camera)	Ctrl+D	Benchmark mode (press twice)

## Train protection

There are 2 train protection systems in this beta. On the main line, the “ATB” system from the Rotterdam metro is used. At the end of the route, there is 1 test track with the ZUB system that is used by the RSG2 vehicles.


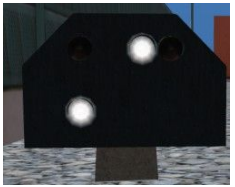


### ATB

The ATP system uses cab signaling. This means that, except at train yards, no light signals are used. Lights inside the cabin show the maximum speed and when the train has to stop. The SG2 vehicles in this beta use the following lights in the cabin:

	<b>“Groen 35”</b> Maximum speed 35km/u.		<b>“0 absoluut”</b> Stop signal, train will be forced to stop and will be blocked. Signal appears at junctions when no route is set and at end of track.
	<b>“Groen 50”</b> Maximum speed 50km/u.		<b>“10 absoluut”</b> Danger, appears when closing to junction and no route is locked. Maximum speed 10km/u and buzzer has to be stopped every 7 seconds. Train should be stopped before a sign with 'S' placed next to track.
	<b>“Groen 70”</b> Maximum speed 70km/u.		<b>“0 permissief”</b> Danger, appears when no signal is received, for example when driving in the wrong direction or when the current block is full. Maximum speed 10km/u and buzzer will sound every 7 seconds.
	<b>“Groen 80”</b> Maximum speed 80km/u.		<b>“0 permissief”</b> Maximum speed 20km/u and buzzer will sound every 7 seconds. Appears when nearing a block that is filled by another train or when nearing a junction that isn't set.
	<b>“Vertreksverbod”</b> Maximum speed 50km/u, every 7 seconds buzzer needs to be stopped. It is not permitted to depart from the station. This signal is used when no route is set or train is ahead of schedule.		<b>“Geel 50”</b> Maximum speed 50km/u and buzzer will sound every 7 seconds. No active signaling in this block, drive on sight.

With a few signals there is a notice that a buzzer will sound every 7 seconds. If you hear the buzzer you will have to stop it with the ~ key (above the Tab button) or the train will be forced to stop. When you are stopped at a station there is no need to press the key, the buzzer will stop after 7 seconds and the train will be blocked, but when the signal changes to green it will be unblocked.



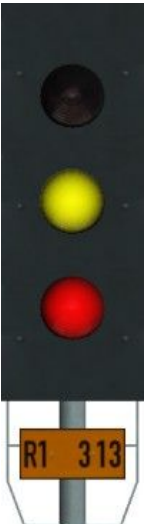





At train yards, in addition to the cab signals, the following light signals are used:

	<b>Red signal</b> Stop before this signal		<b>White signal</b> Passing signal is allowed
	<b>S sign</b> Stop when signal shows “10 absoluut”		<b>End of ATB system</b> End of the section protected with ATB.









## ZUB

The ZUB system is a point based signaling system using light signals. The following light signals are used:

			
<b>Green</b>	<b>Yellow</b>	<b>Yellow-Red</b>	<b>Red</b>
Proceed with local speed, the next 2 blocks are free.	Proceed, reduce speed to stop before the next signal.	Next block is full, passing signal is allowed to couple with maximum 10km/u.	Stop
			
<b>Green + blinking number</b>	<b>Green + number</b>	<b>Yellow + number</b>	<b>No light</b>
Proceed, reduce speed to number x 10, speed must be reached at next signal.	Proceed with speed as shown by number x 10, the next 1 blocks are free.	Proceed with speed as shown by number x 10, reduce speed to stop at next signal.	When white cross is attached to signal: proceed, signal out of use. Otherwise: stop immediately.

The maximum speed is shown using signs. There are 2 speed: the track speed shown with green signs, and the local speed shown with white signs. Stations may be passed at 50km/h at most. The next list shows all signs:

	<b>Speed sign</b> Local speed is number x 10		<b>Reduce speed</b> Reduce speed to number x 10, white speed sign will follow where speed has to be reached.
	<b>Track speed</b> Track speed is number x 10 from this place until the next green sign. Local speed may be lower, as shown by white speed signs.		<b>Station</b> Reduce speed to 50km/h
	<b>End of ZUB system</b> End of the part protected with ZUB, appears when switching to other system.		<b>End of train protection</b> From this point there is no more protection of track and junctions.

Finally, ZUB also used cab signals. In the speedometer a red arrow is installed showing the maximum speed, calculated by the train, to stay within the speed limit. Next to the speedometer there is a panel with a display and 4 buttons.



The display in this panel shows the target speed. When the train has to slow down, this will change to the new target speed.

Since ZUB is a point based system, new signaling may not be received by the train until it passed a signal. Because of this, when a red signal changed to yellow or green, the cab signal point still force you to slow down to 10km/h. In that case you have to proceed with 10km/h until you reached the system or the train protection system will stop the train.

## Activities

In the main menu, you can choose to play an activity. When you start the activity in player mode, your tasks are shown in the player schedule. This can be accessed by moving the mouse to the top right of the screen.

At the top of the schedule, the activity name and time duration are shown. Below that, each task is listed with start and end station and time. Sometimes start and end station are the same, for example with shunting operations. See the description below what you have to do. This can for example be this:

### *Drive Train 5513BZ*

Which means you have to drive train 5513BZ. Although you mostly don't need the full train number, you can use it to locate your train on the traffic control screen. Sometimes, with this order a second order has been added:

### *Drive Train 5513BZ*

### *Couple with train 5561BZ*

In that case, at your final destination you have to couple with another train. You will be directed to the track where this train is standing.

Metro Simulator		Beta spits 08:11:45 - 08:43:00	
OMM2 08:11:45		ZVK 08:16:00	
Drive train 5513BZ			
ZVK 08:18:00		BLA 08:25:00	
Drive train 5513ZB			
BLA 08:27:00		ZVK 08:34:00	
Drive train 5513BZ			
ZVK 08:34:00		ZVK 08:36:00	
Decouple train 551 5512ZB 2 cars		5561ZV 1 car	
ZVK 08:36:00		BLA 08:43:00	
Drive train 5512ZB			

## Decouple

Another operation is decoupling. When decoupling, you have to take care you decouple at the right position. Your schedule will tell you how many trains each part gets:

ZVK 08:34:00	ZVK 08:36:00
Decouple train 551 5512ZB 2 cars	
5561ZV 1 car	

The left part is the train that will leave first after decoupling, while the right part leaves second, or stays behind. In case the train stays behind, you might have to move it to the end of the track, if that is the case that will be listed in your schedule.

Keep in mind that the driving direction will change at a terminus, so when you have to decouple a 3-car train into a 2-car and 1-car train, you have to decouple the last 2 trains, cause they will leave first after reversing.

## ***Timetable***



During activities, you can view the timetable by pressing the timetable button in the dock on the left of your screen.

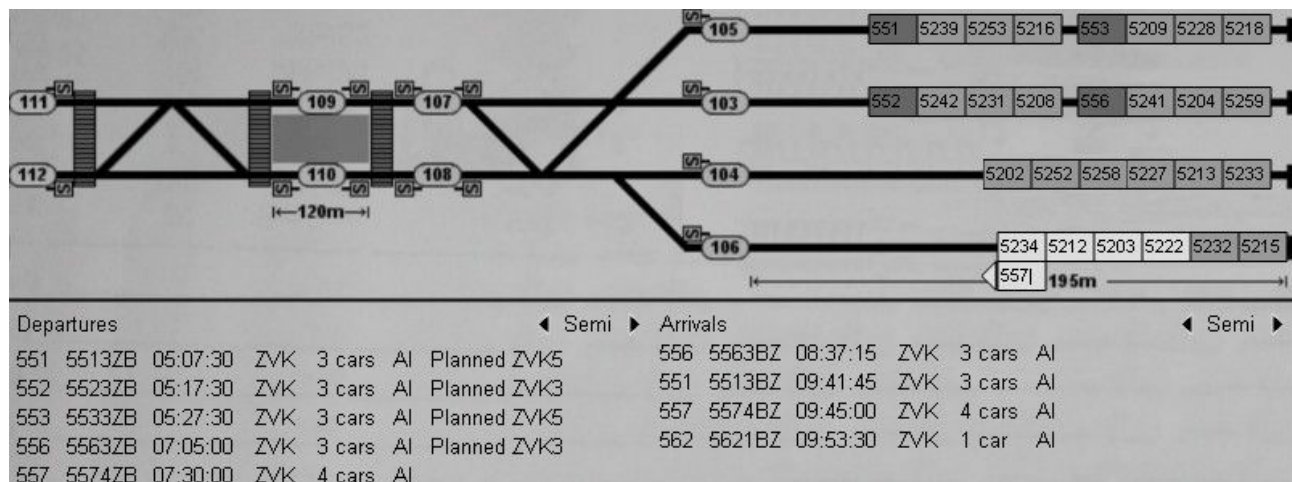
In the timetable you can use the 2 horizontal arrows on top to move to earlier or later times, while the vertical arrows allow you to change the current timetable you are viewing.

Besides the times, the timetable also shows when a train is planned to couple or decouple. It is also shown when a train is set to head to the train yard after arriving at the terminus, in that case the time at the last station is replaced by a straight line.

Timetable Westbound														
	552-3	553-4	556-3	554-4	555-3	553-4	551-3	554-4	552-3	553-2	556-2	558-2	555-2	553-2
▼BLA	08:44	08:48	08:52	08:55	08:59	09:03	09:07	09:10	09:14	09:20	09:25	09:30	09:35	09:40
•HUH	08:46	08:49	08:53	08:57	09:01	09:04	09:08	09:12	09:16	09:21	09:26	09:31	09:36	09:41
•LOL	08:47	08:51	08:54	08:58	09:02	09:06	09:09	09:13	09:17	09:22	09:27	09:32	09:37	09:42
•BRB	08:48	08:52	08:56	09:00	09:03	09:07	09:11	09:15	09:18	09:24	09:29	09:34	09:39	09:44
▼OMM	08:50	08:53	08:57	09:01	09:05	09:08	09:12		09:20	09:25	09:30	09:35	09:40	09:45
•ARG	08:51	08:59			09:06		09:14		09:21		09:32		09:42	
•OMG	08:52	09:00			09:07		09:15		09:22		09:33		09:43	
•HVVY	08:54	09:01			09:09		09:16		09:24		09:34		09:44	
•MBN	08:55	09:03			09:10		09:18		09:25		09:36		09:46	
▼ZVK	08:56	09:04			09:11						09:37		09:47	
		1)			2)	3)								
Notes														
1) Decouple to 5562ZB and 5572ZB														
2) Couple with train 557, decouple to 5572ZB and 5552ZB														
3) Decouple to 5532OB and 5582OB														

## Train yards

The beta has 2 train yards: BPK and OPK. These yards are used to store trains when they are not in service. These yards can be controlled using the yard tool. This tool is available only in activities when the yard is being used, and is available through the dock. The tool looks like this:



The yard tool has 2 parts. At the top the track plan with all trains at the yard. Below that is a list of planned departures and arrivals. Departures and arrivals each have a mode with the options manual, semi(automatic) and auto(matic). In manual mode everything must be done by hand, the tool is only there for yourself in that case so you know what train is where. In semi-automatic mode, you can use the tool to plan which trains goes where, and the AI does the rest. Finally, in automatic mode, everything is done automatically based on the plan preset in the activity.

The planning of departing trains is done by selecting the vehicles in a consist by clicking the first and last one, and filling in their train number (as show most left in the departure list). By clicking twice on a selected vehicle, you can set the direction they depart.

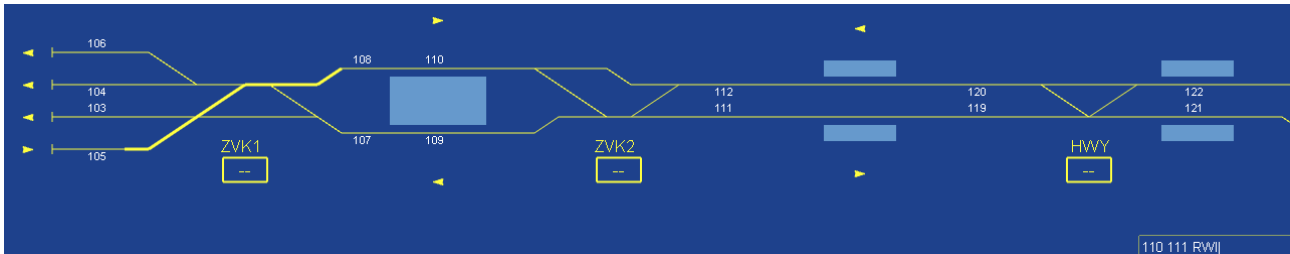
In order to plan arriving trains, you need a free track. Free space is shown in meters in the tool. This is shown both at start and end of the track (when available). You click the box from the side where the trains will arrive, and a popup with 3 boxes appears. Use TAB to navigate through the boxes. In the first box enter the train number, in the second the number of vehicles, and in the last one the stopping position. As stopping position you can enter a number that corresponds with a stop sign, 'C' to tell the train to couple, or 'S' to drive as far as possible on the yard. In this beta, deleting planned trains and changing the AI flag is not yet possible.

## Shunting

The yard tool is used for planning trains and getting an overview of the parked trains. For shunting on the yard, you should open the traffic control window, as the yard tool doesn't show all tracks. See the next section for how to make paths using the traffic control tool. At the side of the yard, next to the depot, there is a part of the yard without electrical power and with switches that should be operated manually. You can double click to flip the switch levers. Opening the doors of the depot works by double clicking as well.

## Traffic control

In order to drive the train needs a safe signal, and in order for a signal to be safe the switches have to be set and locked and driving direction set. This can be done with the included traffic control system. This window can be opened by pressing F1. The screen shows all tracks, trains and routes set. By pressing and holding the right mouse button the view can be moved.



The fastest way to set a route is using the console at the bottom right. The hotkey F2 can be used to access this console quickly.

## Routes

In order to create a route you type in the code of the block where you want the route to start, followed by the code of the block where you want it to go to, followed by the letters "RWT". So to create a path from the bottom track (105) to the top platform (108) the command is:

**105 108 RWT <enter>**

If the route does not appear, make sure there is no traffic coming from the other direction or if another route is set in the opposing direction. An unwanted route can be removed by typing the same codes, followed by "RWO". So to remove the route we just made we use the command:

**105 108 RWO <enter>**

When a train has passed the junctions, the path will be cleared automatically.

## Train numbers

During activities, junctions can be controlled automatically. For this to work the train has to be assigned a train number. When no train number is assigned, the train will get a F-number, which you have to change into a real train number.

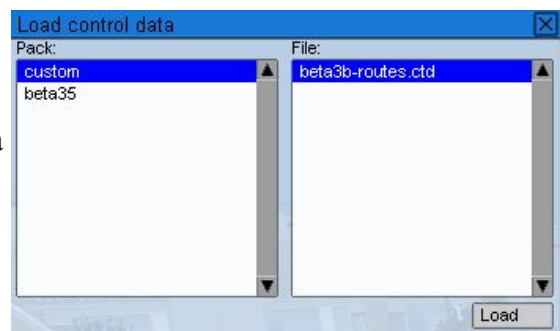
To change the train number, in the console first type the old number, followed by the new number and then "TWZ", like this:

**F10002 5512ZB TWZ <enter>**

When there is already a train with number 551, it will be deleted.

## Explore mode

In explore mode, in order to use train numbers, you will need to load the control data. From the Control menu, select "Load Data". In the window that opens, select "custom" on the left and on the right select the route data you want to load. The default is "beta3b-rotues.ctd", but future addons and custom routes might show up here as well.





The train number is made of the following parts:

**551** – schedule number, this must be unique, when there is a train 5513BZ, there cannot be a 5512ZB.

**2** – number of cars

**Z** – starting point of train

**B** – ending point of train

The following codes can be used in the beta as start and end

**Z:** ZVK

**O:** OMM

**B:** BLA

**W:** BLA yard (will direct trains to BLA1)

This way you can construct your own route, for example:

**5992ZW**

To create a route to BLA yard.

Besides changing a train number, you can split it. In this case a single train number is changed into 2 new numbers. Here you first provide the old number, followed by the 2 new commands and the command SPLIT:

**551 5511ZB 5521ZB SPLIT <enter>**

The first number is the train that will be split (only the first 2 numbers are required for trains with valid train number), the second is the new number of the train that will depart first, the third number is of the train that leaves second or stays behind.

## ***Junctions***

During activities, junctions are set automatically. How this is done is controlled by the junction mode. This is displayed below each junction, the following modes are available (not all junctions have all):

FE – Manual (no automatic routes)

AK – Automatic reversing (used at terminus, sends train to free track)

AB – Automatic (used at diversions, train gets route based on destination code)

DV – Straight traffic (no diversions, all trains head the same way)

To change the mode, enter the name of the junction followed by the wanted mode:

**OMM1 FE <enter>**

## ***Legal notices***

This software uses the OpenAL audio API by Creative Labs. This library is distributed with the following license:

Creative Labs, Inc. is providing you with this OpenAL32.dll installer and other OpenAL files ("Software"). You may use and freely integrate with your software applications and distribute such throughout the world at no cost or further obligation to Creative.

### **NO WARRANTY**

ANY USE BY YOU OF THE SOFTWARE IS AT YOUR OWN RISK. THE SOFTWARE IS PROVIDED FOR USE "AS IS" WITHOUT WARRANTY OF ANY KIND. TO THE MAXIMUM EXTENT PERMITTED BY LAW, CREATIVE DISCLAIMS ALL WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. CREATIVE IS NOT OBLIGATED TO PROVIDE ANY UPDATES OR UPGRADES TO THE SOFTWARE.

No other entity or person is authorized to expand or alter this warranty or any other provisions herein. Creative does not warrant that the functions contained in the Software will meet your requirements or that the operation of the Software will be uninterrupted or error-free or free from malicious code. For purposes of this paragraph, "malicious code" means any program code designed to contaminate other computer programs or computer data, consume computer resources, modify, destroy, record, or transmit data, or in some other fashion usurp the normal operation of the computer, computer system, or computer network, including viruses, Trojan horses, droppers, worms, logic bombs, and the like.

You assume full responsibility for the selection of the Software to achieve your intended results, and for the downloading, use and results obtained from the Software. You also assume the entire risk as it applies to the quality and performance of the Software.

IN NO EVENT WILL CREATIVE'S LIABILITY TO YOU OR ANY OTHER PERSON EVER EXCEED THE AMOUNT PAID BY YOU TO USE THE SOFTWARE, REGARDLESS OF THE FORM OF THE CLAIM.