

PTraffic ProPlus 1.5

Manual

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1. General

1.1. Introduction

PTraffic ProPlus is designed to edit timetables.

Line maps can also be created and managed. The line maps can be scaled, saved as graphic image file or printed.

Data will be stored in 'Portable Table Format' (PTF) which can be used in conjunction with JavaScript and SQL languages like PublicSQL (see <http://www.en.publicsql.org/>).

You can provide Internet-Applications using the timetables as a basis. A selection of PublicSQL applications is already included in PTraffic ProPlus. PTraffic ProPlus adds the ability to generate line maps. A simulation will be created based on these line maps.

1.2. Symbols and formatting used

1.2.1. Symbols

💡 Tip / Professional tip

🔄 Change in the manual since last version.

1.2.2. Formatting

Source texts are written in the Monotype font 'Courier New'. Example:

```
<meta name="description" content="Termin">
```

1.3. Prerequisites

PTraffic ProPlus is designed to run on Microsoft Windows® XP, Vista, Windows 7, Windows 8 and Windows 10.

1.4. Installation

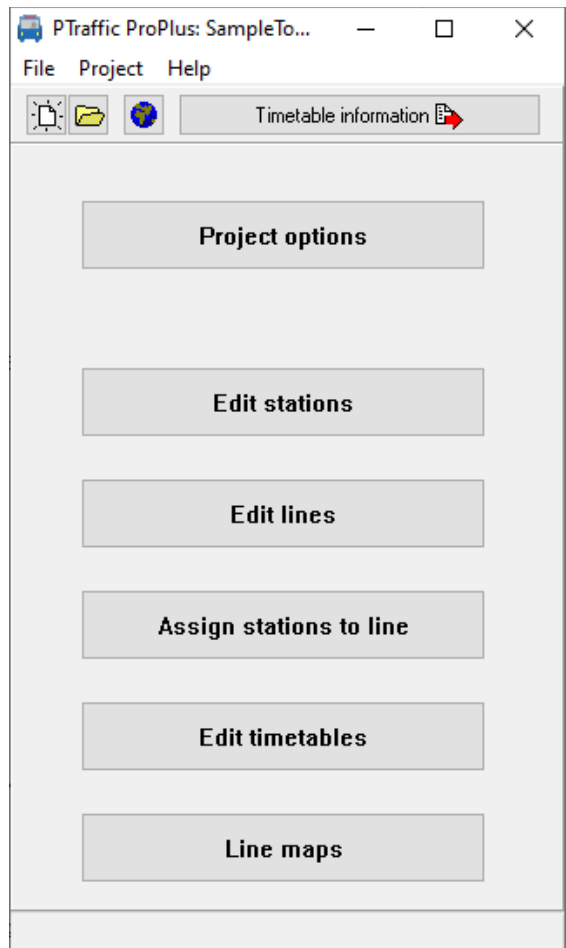
For easy installation on your local computer a setup executable for Microsoft Windows® is supplied with the application.

1.5. Start

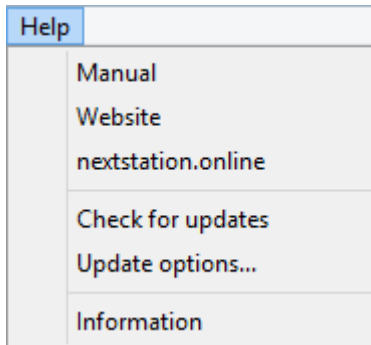
Double click on the Ptraffic-Pro-Symbol at your desktop or choose the PTraffic ProPlus via the start menu.

A sample project called „SampleTown” is included and will be installed in addition to PTraffic ProPlus. The sample project can be used to make yourself familiar with the functions of PTraffic ProPlus. Use the Menu „File → Load Sample Project” to load the project „SampleTown”.

The sample project will be installed to the folder for program data. On Windows 8 this is the folder called Windows/ProgramData.



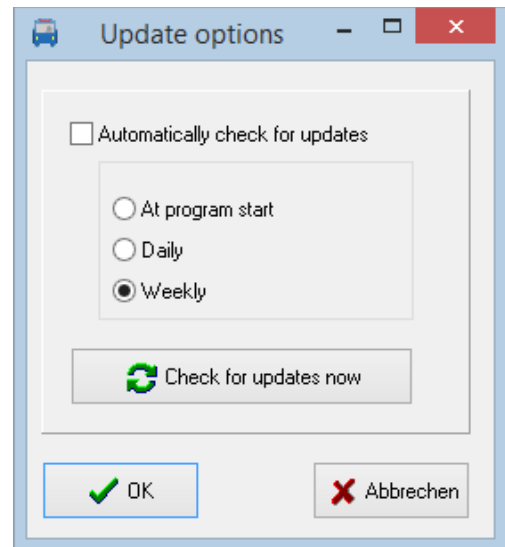
1.6. Software-Update



To carry out updates for the program please choose if you want to check for updates at each program start, daily, weekly or manual if needed.

1.6.1. Update options

In menu Help → Update options you can specify if and in interval you like to look for updates



- **Automatically check for updates**

If you enable the automatic update search, the program will periodically check the Internet for updates. The search can be performed at the following time:

- **At program start**
Look for updates at every program start of the program.
- **Daily**
Look for updates at the first program start of the day.
- **Weekly**
Look for updates at the first program start of a week.

- **Check for updates now**

Click this button to for an immediate search for available updates at the Internet. If updates are available, they will be downloaded and installed. For details on this process see next chapter.

1.6.2. Search for updates

In addition to the already described automated update functions you can select to search for updates by choosing Help → Search for updates

If you selected to search for updates the update wizard will look for updates and guide you through the update process to install the updates.

In the window with the associated files, all the files displayed there are required and you should not deactivate them.

After download is complete the program will be stopped, and the new version will be installed.



2. Projects

At start-up of PTraffic ProPlus you have the option to open an already saved project or create a new one.

2.1. Create a new project

When you create a new project, it is recommended that you first create a new directory for the project.

Choose 'File → New' or click on the new project icon (the one with the white paper) to create a new project. A pop-up will tell you that the project must be saved before editing. Click OK and choose a folder and name in the save dialog and save the project.

Please take a separate (new) directory for each project. Otherwise several projects will use the same files and inconsistencies of the data will occur. Please do not use the program directory (e.g. "C://Program Files (x86)/PTraffic Pro ") for your own projects, otherwise files may be overwritten there. If you have already used this directory you should backup your project data and reinstall the program.

2.2. Open an existing project

Choose 'File → open' or click on the button with the folder-symbol. Choose your project in the open dialog and press open.

2.3. Project options

In project options you define important settings for your project.

2.3.1. Lines

Allows you to change the default color for lines.

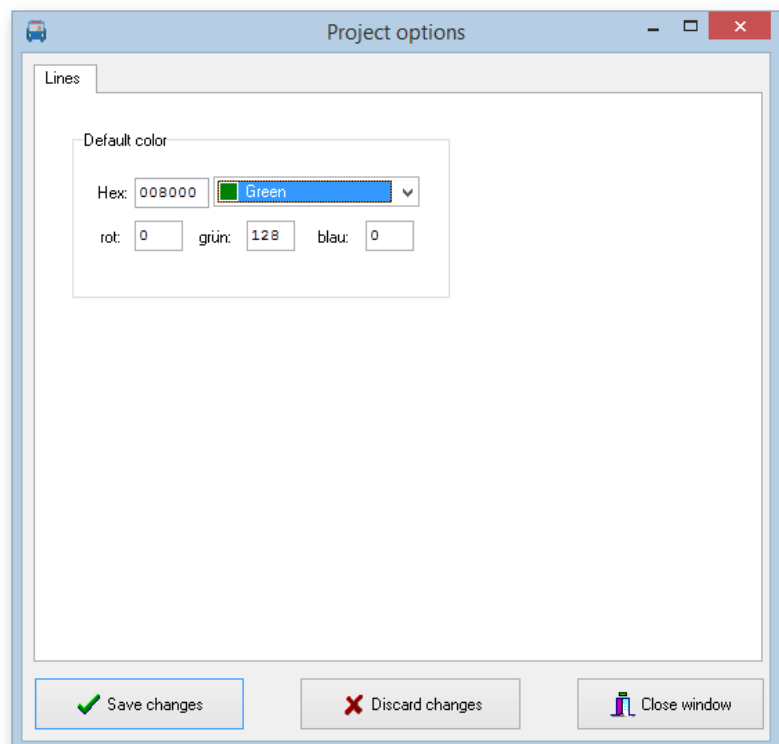
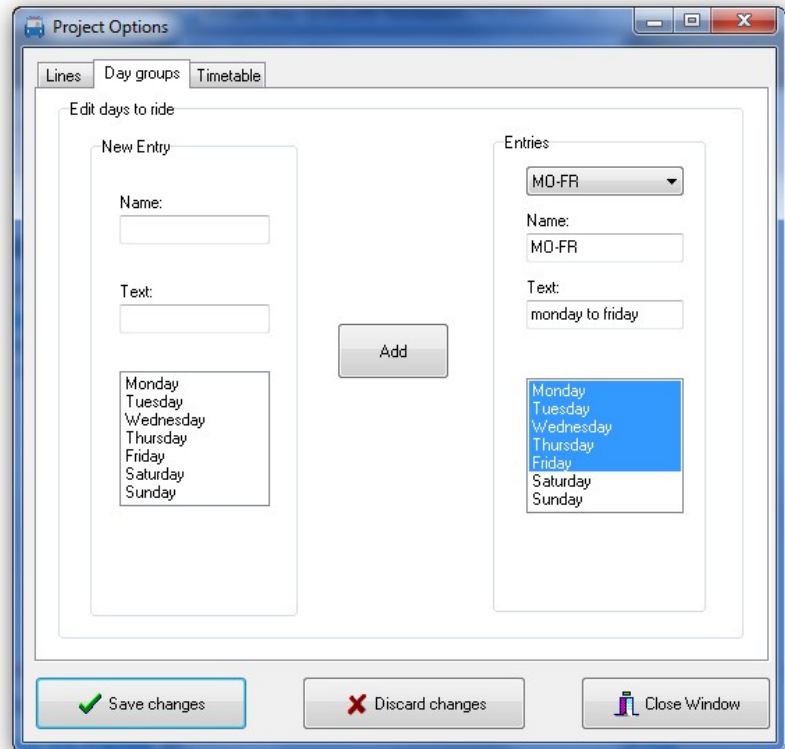
The default line color will be used for lines in the line map editor unless specified in further definitions.

2.3.2. Selection of Days

You define the days of travel. The current version of PTraffic has no automated calculation for holidays included. When selecting a time table, the defined days of travel will be selected. Predefined are settings for Monday through Friday, Saturday and Sunday.

2.3.3. Time-schedule

Allows you to change the maximum travel time between 2 adjacent stations. This is to prohibit longer travel times in the editor and thus can be used to reduce errors when entering data.



3. Editing data

After definition of a new project you start to enter the timetable details.

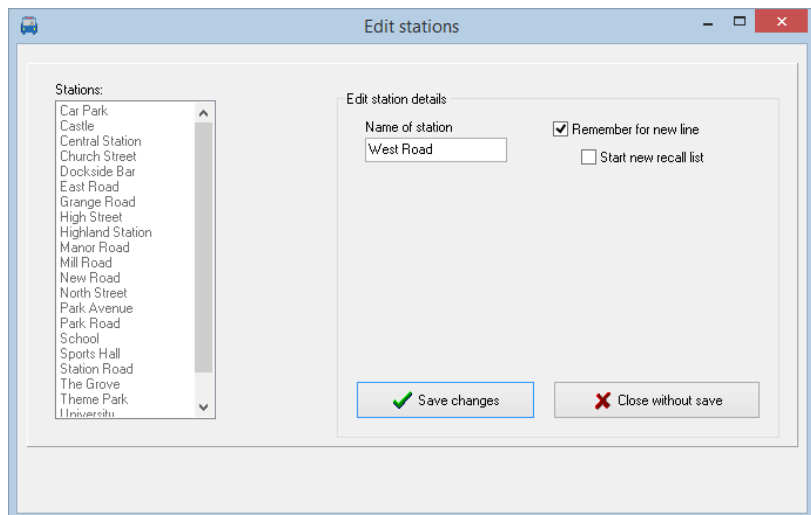
We suggest you use the following sequence for every line:



1. Define stations along a line
2. Define the line
3. Assign stations to the line
4. Define timetables

3.1. Edit station details

Click „Edit stations“ from the main window. This will open a window with functions to add, edit or delete station entries.

When assigning a new station, you can select to put the station into a shortlist for quicker insertion of stations to a line later on. You will get the option to add the station to the current shortlist or start a new shortlist.



  Tip: You do not need to constantly switch between

keyboard and mouse operation when entering the individual stations. The "Save changes" button is preselected and the "Edit stations" button of the main window also remains selected. Therefore, after entering the first station, you can simply press <RETURN> 2 times and then enter the next station(s).

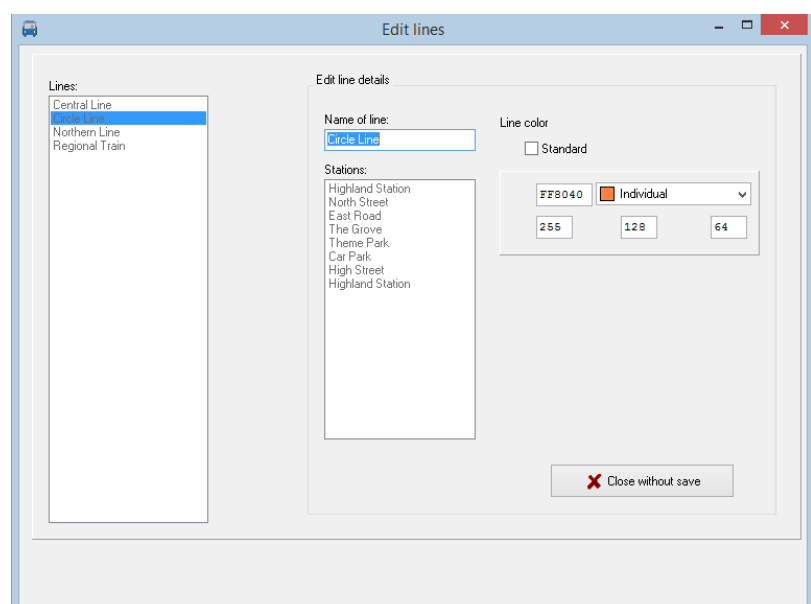
3.2. Editing line details

Click „Edit lines“ from the main window. This will open a window with functions to add, edit or delete line entries.

When editing line information, you will also be presented a list of associated stations. This list is for information only – no changes to stations can be made here.

You can select a different color for every line or just use the default one which can be changed in the project options.

The default line color will be used for lines in the line map editor unless specified in further definitions.

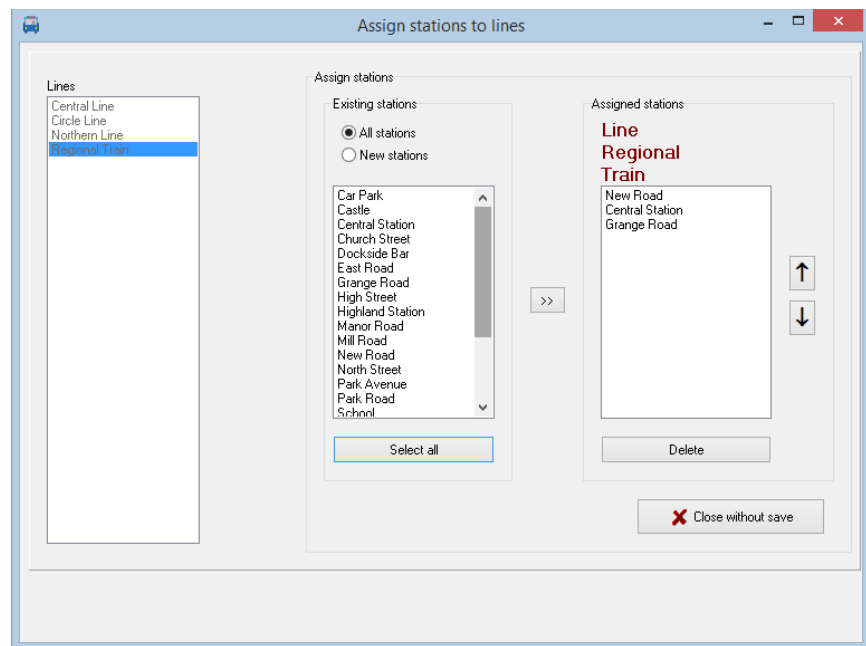


3.3. Assign stations to lines

Click “Assign stations to lines” in the main window. This will open a window where you can assign stations to lines or change the assigned stations. Select a line and press the button with the right arrow.

In the allocation window the left list shows the available stations (selected by shortlist or all). The right list is the list of stations already assigned to the line.

You can add and remove stations as well as change the sequence of stations.



Notice: Stations may appear twice on a line because of different arrival and departure times. They can be added here or later in the timetable editor.

3.4. Editing timetables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stations															
+ Sports Hall	08:11	15 Min	19:11												
+ Park Road	08:21	15 Min	19:21												
+ West Street	08:31	15 Min	19:31												
+ High Street	08:41	15 Min	19:41												
+ Station Road	08:51	15 Min	19:51												
+ Central Station	09:01	15 Min	20:01												
+ Park Avenue	09:11	15 Min	20:11												
+ Church Street	09:21	15 Min	20:21												
+ East Road	09:31	15 Min	20:31												
+ University	09:41	15 Min	20:41												
+ Mill Road	09:51	15 Min	20:51												

In the main window click at “Process timetable”. This will open the editor window.

There you enter the daily schedules for weekdays (Monday through Friday, Saturday and Sunday) and the direction (1,2). To do so, select the required values and press “Edit timetable”.

In the editor you enter the details for all movements along the line.

Entering data:

- Entering time: You may use the following formats: hhmm, hh.mm, hh:mm
If you enter times without separator, data will be padded with 0 to the left if 3 digits are entered, thus entering 107 will be interpreted as 01:07.
- Intervals: If consecutive movements are done with the same interval you enter amm for the next movement to indicate the interval. So a10 for the next movement will make a 10-minute interval. As an alternate you may enter mmMin (such as 10Min) which is the format used for display later on.
When you press enter or leave the input cell you get an option whether the data entered are to be used for the following stations. If you decide to do so, the data are used for the following stations.
- Entering minutes: If you enter 1 or 2 digits these will be interpreted as a minute and the hour of the previous station will be used. If the minute entered is lower than the minute entry of the previous station, one hour is added. Crossing midnight will be respected too, so 24 will be reset to 00.
If this is the first station the previous entry will be used for calculation.
- Using the value from a previous cell: To copy the value from a previous cell you can enter =, s or S.
- Using the value from a previous movement: Movements are numbered, and you can enter =nn, snn or Snn to copy the time differences from the movement nn. The movement will then be calculated automatically.
- Adding minutes: Enter minutes in the form +mm to add minutes to the previous time entered.

In the timetable, you can double stations that occur only once in the line with the '+' sign in the 1st column to enable separate specification of arrival and departure times. You can also delete one of the two stations (or lines) with '-'.

Using the help button will show a quick reference of common used editor functions in a separate window.



3.4.1. Insert or delete columns

Insert column will insert an empty column to the left of the selected column which is shifted to the right.



Delete column will delete the selected column from the table and the remaining columns will be shifted to the left.

3.4.2. Delete timetable

Click at “Delete schedule” to delete the entire schedule.

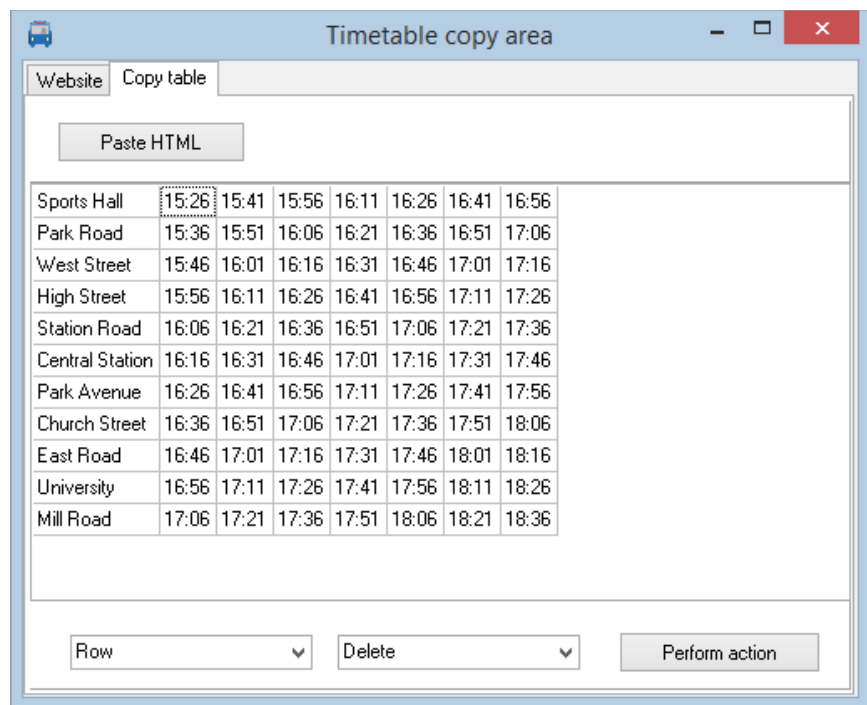
3.4.3. HTML import

If you click the 'HTML Import' button in the timetable editor you can try to copy data from existing Internet pages into the timetable enabling departure time.

To use this function if the selected internet site looks approximately the same as the PTraffic Editor and is built as a normal HTML table.

The station names to be imported should essentially be the same as the one already defined to allow best results when importing the table.

Imported data can be adapted to match your schedule and are then imported.



The import process:

1. Click on „HTML import“ to open the import window
2. Choose register “Website”
3. Enter the web-URL and press “Display website”
4. After the page is displayed completely press “Copy HTML”
5. Change to register “Table copy”
6. Click on “insert HTML”. If the website can be interpreted a table of schedules will be displayed.
7. Change the import data to insert, delete or duplicate entries so it fits your requirements. This may be necessary to enter stations with different arrival and departure times.
8. Select the area you want to copy into your own schedule and press “Copy selected area to clipboard”
9. Close the import window and navigate to the position in your schedule to place the data. Select “Insert HTML selection” to put the data into your schedule.



If importing directly from the website does not work, you can try to select the table on the website and copy it to the clipboard. Then you can paste it into the spreadsheet (Open Office Calc, Excel). Here you can then edit the table if necessary and then save it as an HTML file. Then call up the HTML file in the browser and copy the address in the Website tab of the Import window.

The screenshot shows the 'Edit timetable' application. A dialog box titled 'Timetable copy area' is open, displaying a table of train times for the Central Line. The table has columns for the line name and days of the week (1-7), and rows for various stations. The background shows a list of stations with expand/collapse symbols (+/-) and a spreadsheet interface with columns 14 and 15 visible.

Central Line	1	2	3	4	5	6	7
Sports Hall	17:26	17:41	17:56	18:11	18:26	18:41	18:56
Park Road	17:36	17:51	18:06	18:21	18:36	18:51	19:06
West Street	17:46	18:01	18:16	18:31	18:46	19:01	19:16
High Street	17:56	18:11	18:26	18:41	18:56	19:11	19:26
Station Road	18:06	18:21	18:36	18:51	19:06	19:21	19:36
Central Station	18:16	18:31	18:46	19:01	19:16	19:31	19:46
Park Avenue	18:26	18:41	18:56	19:11	19:26	19:41	19:56
Church Street	18:36	18:51	19:06	19:21	19:36	19:51	20:06
East Road	18:46	19:01	19:16	19:31	19:46	20:01	20:16
University	18:56	19:11	19:26	19:41	19:56	20:11	20:26
Mill Road	19:06	19:21	19:36	19:51	20:06	20:21	20:36



To ensure that the station lines match, it is recommended to place the import window directly next to the station column of the timetable editor (see figure). If necessary, the station column of the timetable editor can be adjusted by clicking on the [+] symbol in front of the station names to add lines or by clicking on the [-] symbol to remove lines.

3.5. Track and footpath information for PTraffic timetable information



PTraffic ProPlus unfortunately does not currently support track information or information about the walking distance between different stations or between different tracks.

If you are using PTraffic ProPlus for planning or testing purposes, you can implement a track with footpath information for the journey planner by treating the tracks as individual stations, e.g. "North Station Track 1" and "North Station Track 2". Then create a line "Footpath" with the two stations. In the timetable you can now enter 00:00 and 00:01 in the 1st column, enter an interval time of 1 minute in the 2nd column (enter e.g. "1 min") and 23:58 and 23:59 in the 3rd column. The timetable information would then (without changing the filter settings!) look like this, for example:

Arrival in 112 minutes, Pure travel time: 74 minutes

S3: New Road to North Street platform 1, departing: 17:36, arriving: 18:14

On foot: North Street track 1 to North Street track 2, departs: 18:18, arrives: 18:19

U1: North Street Gleis 2 to Park Avenue, departs: 18:23, arr: 18:58

With several stations with different tracks it should work as follows:

Enter the times in the timetable "staggered and consecutive", so for example with 2 stations (station A and station B) with 2 tracks:

As line:

Station A (1)

Station A (2)

Station B (1)

Station B (2)

In the timetable:

In the 1st column, the times 00:00 h and 00:01 h for station A.

In the 2nd column the times 00:02 o'clock and 00:03 o'clock for station B

In the 3rd column the interval time, e.g. 1 minute ("1 min")

In the 4th column the times 23:56 and 23:57 for station A

In the 5th column the times 23:58 and 23:59 for station B

For longer transfer times, the times must of course be adjusted accordingly.

The whole thing will probably only work satisfactorily if the stations with multiple tracks are intermediate stations and not start or destination stations, since you can only specify one station as the start or destination station.

4. Line maps

The line map editor available in PTraffic ProPlus allows you to create line maps – graphical representations of your network of lines.

The maps will be stored in JPG graphics format in the folder „images” in the project folder for further use.

One of the web applications already built into PTraffic-Pro is a simulation which is created from schedule data and line maps.

Functions → Traffic simulation

Simulation

Map: Map 1 Days to ride: Monday to Friday

From 17 45 to 19 45 [18:06:55]

Speed: 20x Update interval: 20 millisecondss Start

Functions

- All Stations
- All Lines
- Course of a Line
- Timetables
- Actual rides
- Timetables for period
- Graphic schedule
- Timetable for stations
- Departure Plan
- Departure board
- Information for passengers
- Transit Maps
- Traffic simulation

Map: Map 1 Days to ride: Monday to Friday

From 17 45 to 19 45 [18:06:55]

Speed: 20x Update interval: 20 millisecondss Start

Regional Train

Northern Line

Central Line

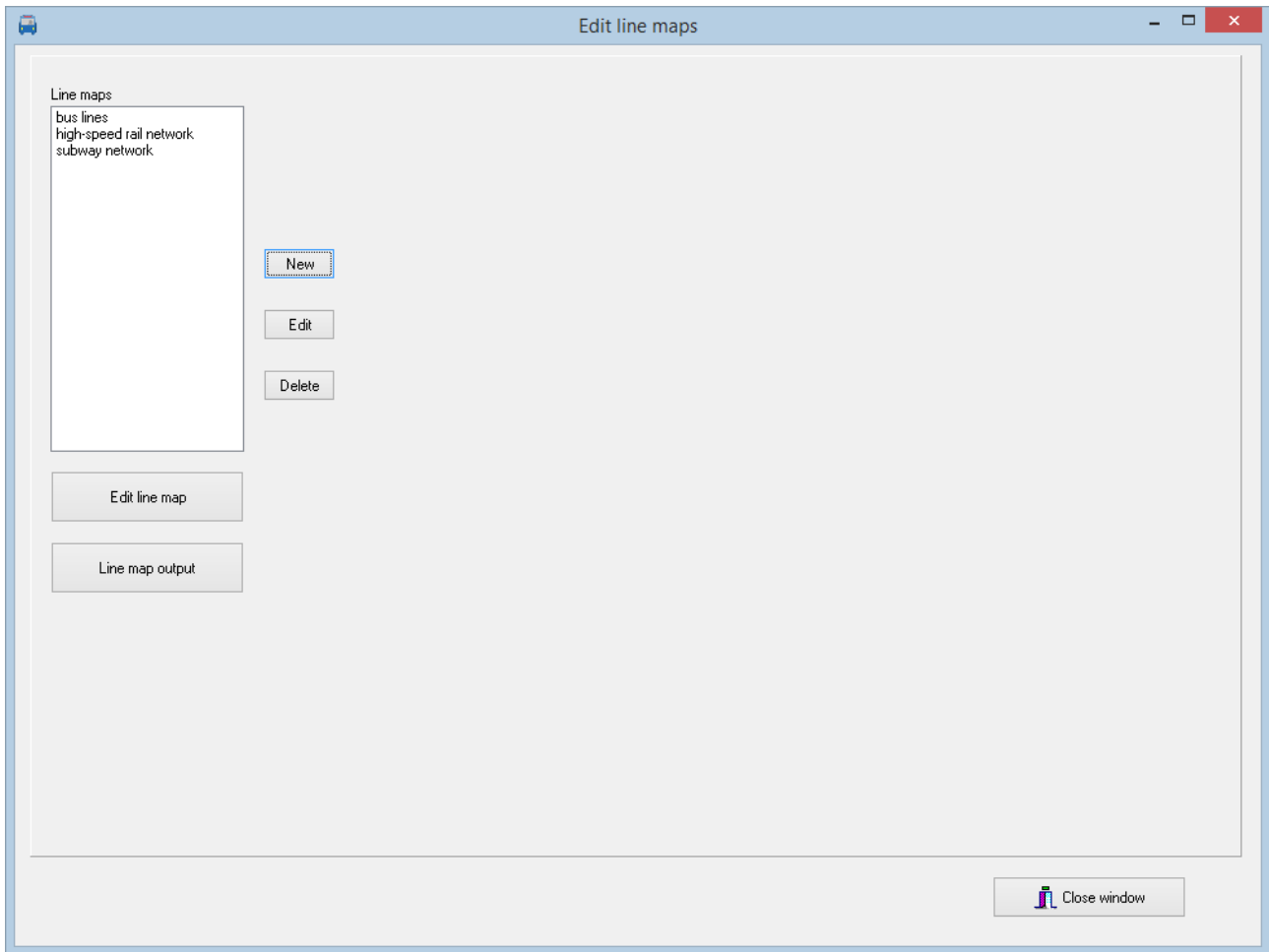
Circle Line

Stations: Castle, Grange Road, School, Highland Station, North Street, Manor Road, Dockside Bar, Sports Hall, Park Road, West Street, High Street, Station Road, Park Avenue, Church Street, University, Mill Road, Car Park, Theme Park, The Grove, New Road

4.1. Edit line maps

Before editing a line map, you need to define stations, lines and the definition which station belongs to which lines. Schedules can be defined later.

To create a line map, click the button „Line map” in the main window. [**← Pro+Plus+Draw**]

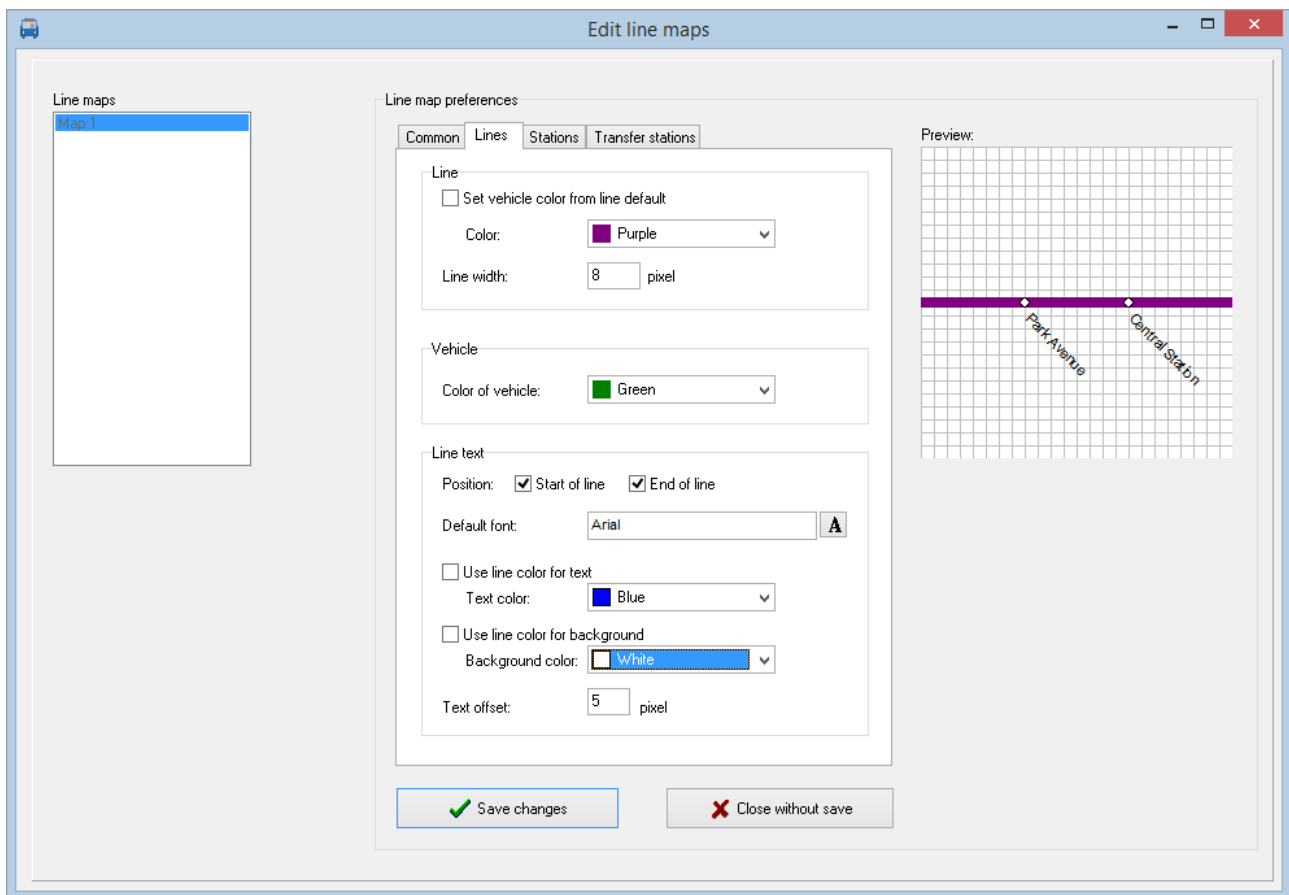


Press „New” in the next window do enter the default settings for a new line map.

To edit default settings an existing line map select it from the list and press „Edit”.

To delete an existing line map select it from the list and press „Delete”

4.2. Line map default settings



Default settings for line maps are divided into four sections:

- **Common** - Basic settings like name, size and background.
- **Lines** – Specific settings for lines like color, text, width.
- **Stations** – Specific settings for stations like font and text position.
- **Transfer stations** – Settings for stations that are on more than one line like symbol used, font and positioning of the text.


Most of these defaults may be overridden in the specific definitions later. Care must be taken on some settings, since their change may have an impact on the whole behavior and may produce unwanted side effects. See comments at the specific descriptions of the defaults.

The preview window on right upper corner shows how changed items will look like.

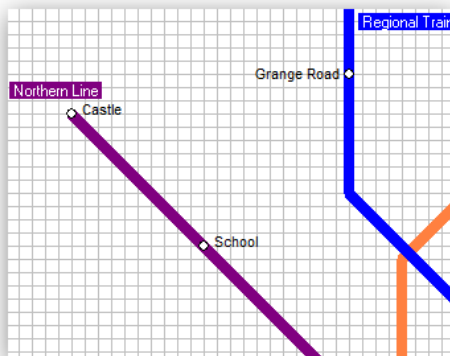
4.2.1. Common defaults

Here you define the defaults for the line map.

- **Name:**
A free format name for your line map.
- **Width:**
The width of your line map in pixels. Changes to this value may cause incorrect display of already existing lines.
If you use a background image the width specification should match the width of your image.
- **Height:**
The height of your line map in pixels. Changes to this value may cause incorrect display of already existing lines.
If you use a background image the height specification should match the height of your image.

 A line map that is considerably larger than the monitor resolution is difficult to draw because the visible screen section is too small. We suggest selecting the image size according to your monitor resolution for easy editing of your line map. For example, if you need 2480 x 1748 pixels for printing, you can first draw the line map with half the resolution (1240 x 874 pixels) and scale it accordingly before printing.


- **Grid width:**
Lines and stations can only be drawn on this grid. The actual grid width is also shown in the preview on left upper corner.




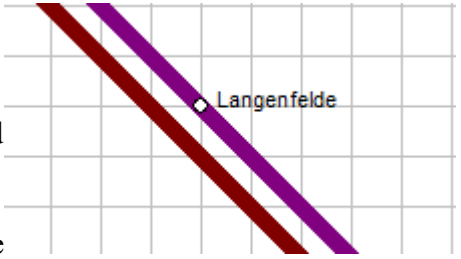
A grid width larger than one pixel serves for easier drawing of lines and stations as well as for the optical representation of the line map. To aid in drawing of lines the grid can also be used.

Changing the grid width will not change existing lines and stations and may cause them to be off the grid. New stations and lines will be drawn on the redefined grid and thus stations may be on different offsets.

It is suggested to change the grid width in multiples or integer parts of the previous one, for example change from 10px to 20px or from 10px to 5px.

 With diagonal lines it is sometimes not possible to create stations at the same height and connect them with a rounded station symbol.


 (Picture on the left). If the 2nd line is drawn one step (or another odd number of steps) down, this is not possible, because stations can only be positioned on the intersection points of the grid (picture right).



This problem can be avoided by specifying an even value for the grid width in the preferences when drawing the lines (e.g. 10) and reducing this value to half (e.g. 5) before positioning the stations.

- **Background color:**

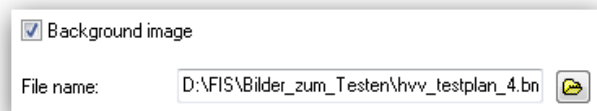
Here you define the background color to be used.

The background color will not be used if a background image is specified.

- **Background image:**

Here you define the image to be used as background. Check the check box „Background image” and choose a file name. The image must be in bitmap format (.bmp).

Hint: You can use existing line maps as background to serve for easier drawing of your own one and remove or redefine the background image later according to your preferences.



4.2.2. Defaults for lines

Here you define the defaults for the lines. All defaults can be overridden in the line map editor for the individual lines.

- **Line:**
Choose the default line color and line width. This can be overridden in the line map editor for each line. Using the check box „Inherit color from line default” you specify to inherit the defaults specified in the line defaults dialog. If this is not specified here the project options setting is used.
- **Vehicle color:**
Choose the default color for vehicles to be used in the Web-application for traffic simulation. This can be overridden in the line map editor for each line.
- **Line text:**
Define the font used and the positioning of the line text. The position defines whether the text is to be placed at the start or end of a line Start and end are automatically defined when drawing the line.

The screenshot shows a dialog box with four tabs: 'Common', 'Lines', 'Stations', and 'Transfer stations'. The 'Lines' tab is active. It contains three main sections: 'Line', 'Vehicle', and 'Line text'.
- The 'Line' section has a checkbox 'Set vehicle color from line default' (unchecked), a 'Color' dropdown set to 'Red', and a 'Line width' input set to '8' pixel.
- The 'Vehicle' section has a 'Color of vehicle' dropdown set to 'Black'.
- The 'Line text' section has 'Position' checkboxes for 'Start of line' and 'End of line' (both checked), a 'Default font' dropdown set to 'Arial', a checkbox 'Use line color for text' (unchecked) with a 'Text color' dropdown set to 'Individual', a checkbox 'Use line color for background' (unchecked) with a 'Background color' dropdown set to 'Silver', and a 'Text offset' input set to '5' pixel.

↻ For more complex lines with branches or circular connections, the start and end position depends on when the respective line segments were added. The position of the line texts may have to be adjusted individually in the network editor.

The font selection allows you to define the font used, the color for text and associated background and the text offset.

You can easily specify to use the line color for text color or text background using check boxes.

The text offset specifies the offset of text relative to the line.

4.2.3. Defaults for stations

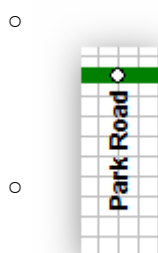
Here you define the format and placement of the station text. This can be overridden in the line map editor for each station.

- **Default font:**
In the font selection dialog you select the font and the formatting of the station text.
- **Default position:**
Specifies the position of station text relative to the line. Depending on the line directions you can position the text left, right, below or above the line.
Defaults can be specified for each of the 4 line directions.



Also depending on the selected line direction, you can make the following settings in the lower area:

- **Horizontal placement:**
Placement of text to the right (positive numbers) or to the left (negative numbers)
- **Horizontal text offset:**
Horizontal offset relative to the drawn line.
- **Vertical text placement:**
Placement of text below (positive numbers) or above (negative numbers).
- **Vertical text offset:**
Vertical offset relative to the drawn line.

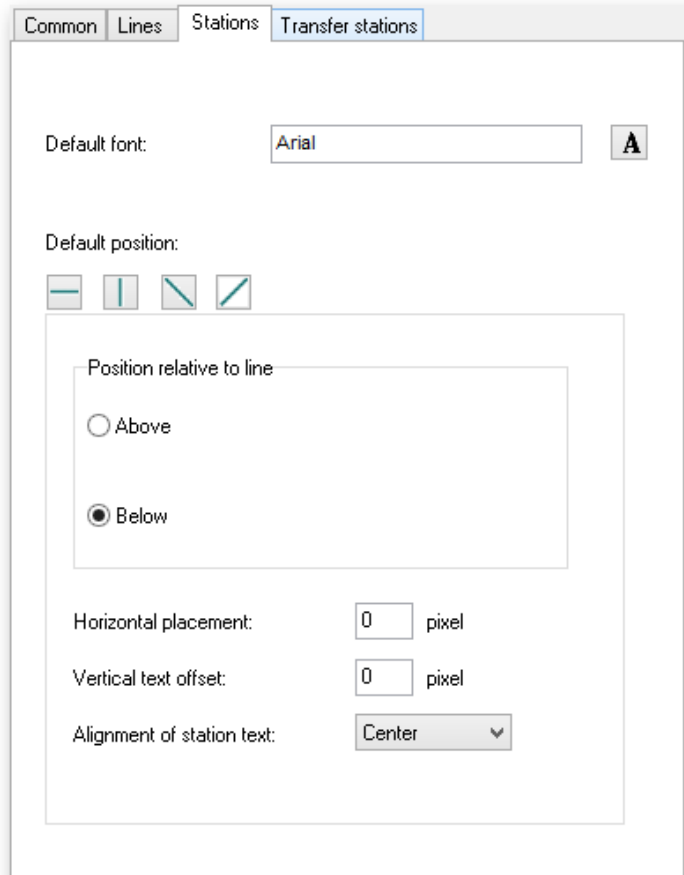
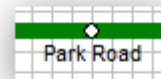


○ **Text placement:**

Specify the position of the station text as left, middle or right to the station symbol. If middle is specified, the station symbol will be centered in the station text.

○ **Text direction:**

Here you specify the direction of the station text in relation to the line. It can be horizontal, vertical or diagonal.

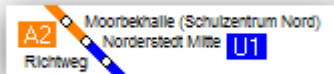


Notice: Diagonal and vertical text can only be used with True Type fonts. Diagonal text may be poorly readable if small font sizes are used.

4.2.4. Defaults for transfer stations

Here you define the format and position of station properties for stations on multiple lines. This can be overridden in the line map editor for each station.

- **Default font:**
In the font selection dialog you select the font and the formatting of the transfer station text.
- **Round symbol for station on the same position:**



By default all transfer stations are marked with a square symbol. This option allows you to specify that a round symbol is to be used. This only works if the drawn station is at the same on both lines. In this case the text formatting of the station definition applies.

-  **Apply text alignment, text direction and text spacing from line settings:**

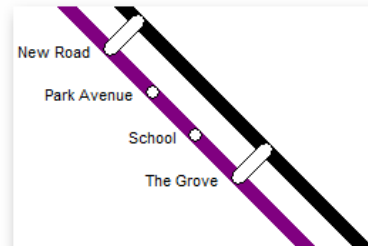
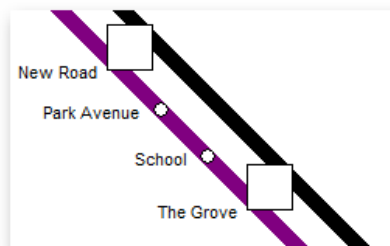
This option can only be selected if the option "Round symbol for stations on the same position" has been selected.


If this checkbox is activated, the settings for text alignment, text direction and text spacing from the "Stations" tab are used. from the station settings of an associated line. Since several lines contain the station, it may be necessary to try out which line is responsible for the station.

- **Rounded symbol for parallel lines with stations in the same level:**

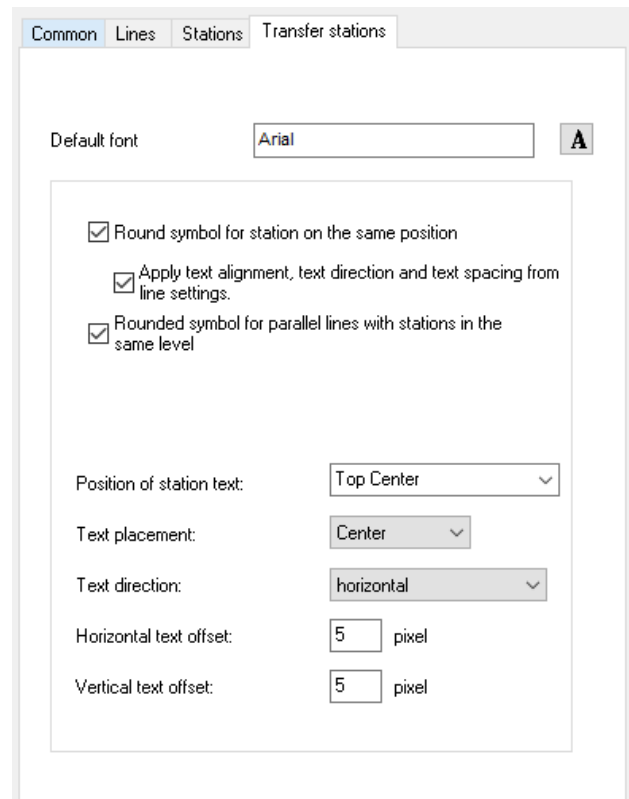
Use a rounded symbol instead of a square one for transfer stations like shown in the example.

Notice: This is only valid if the station is adjacent on both lines, a square is used otherwise.



 Text alignment, text direction and text spacing are taken from the line settings. Which line is relevant for this is again determined by the position setting for the line in the "Stations" tab. For example, with the setting "above" for horizontal lines, the line settings of the uppermost line are used, with the setting "below" the settings of the lowest line are used. If the line in question does not contain any individual settings, the default settings from the Stations tab are used.

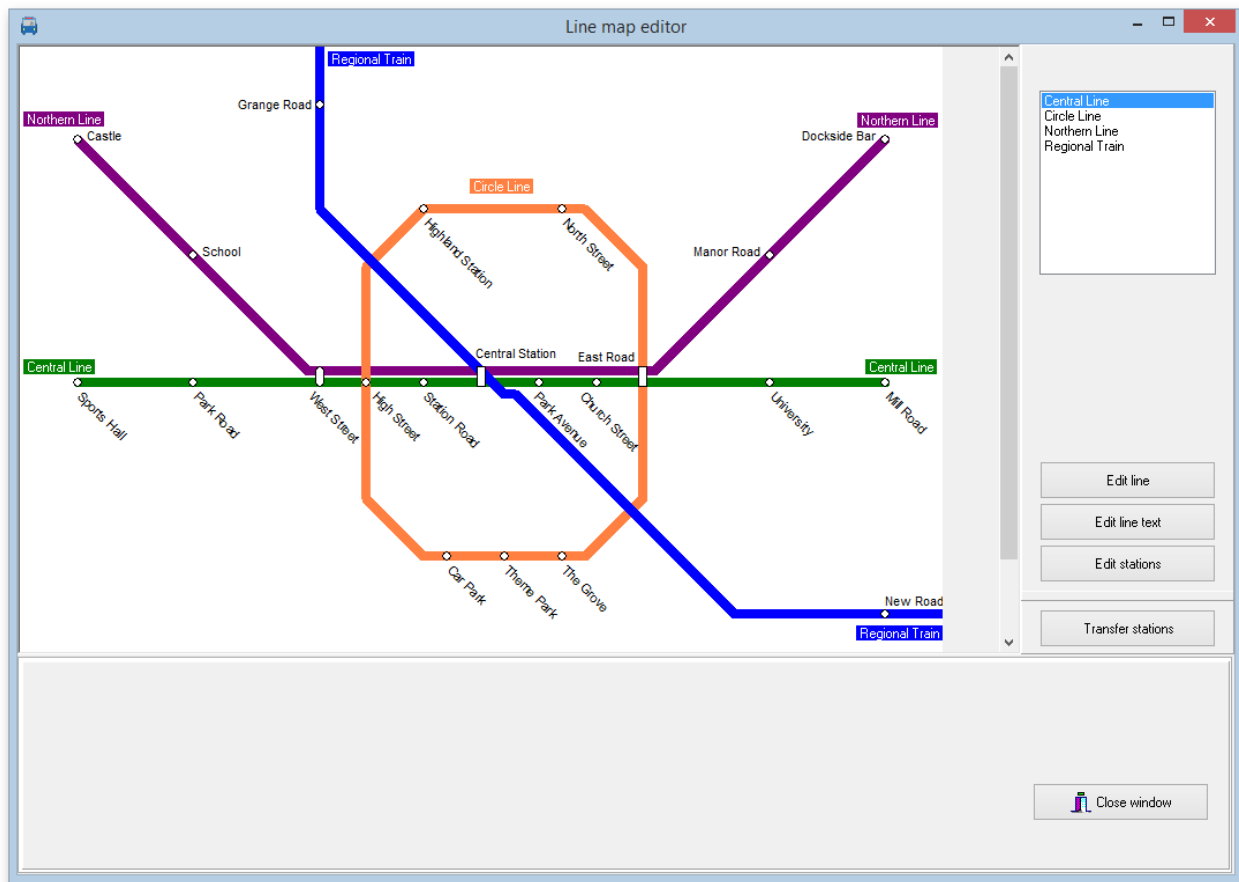
If the station is located on a "corner" of a line, the station must belong to the parallel line section - otherwise no round symbol for transfer station is used.



- **Position of station text:**
Specifies the position of station text in relation to the station symbol.
- **Text placement:**
Specify the placement of text (Left, middle, right). If the Position of station text is „middle below” or „middle above” the text placement can be free chosen.
- **Text direction:**
Specify the direction for the text. The possible selections depend on the specification for the position of station text.
- **Horizontal text offset:**
Horizontal offset of text relative to the station symbol.
- **Vertical text offset:**
Vertical offset of text relative to the station symbol.

4.3. Line map editor

The line map editor allows you to create and maintain your line maps.



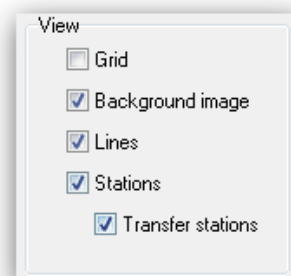
Select your line map and press „Edit line map”.

The line map editor is to draw the lines and position stations along them using the following functions:

- **Edit line**
- **Edit line text**
- **Edit station**
- **Edit transfer station**

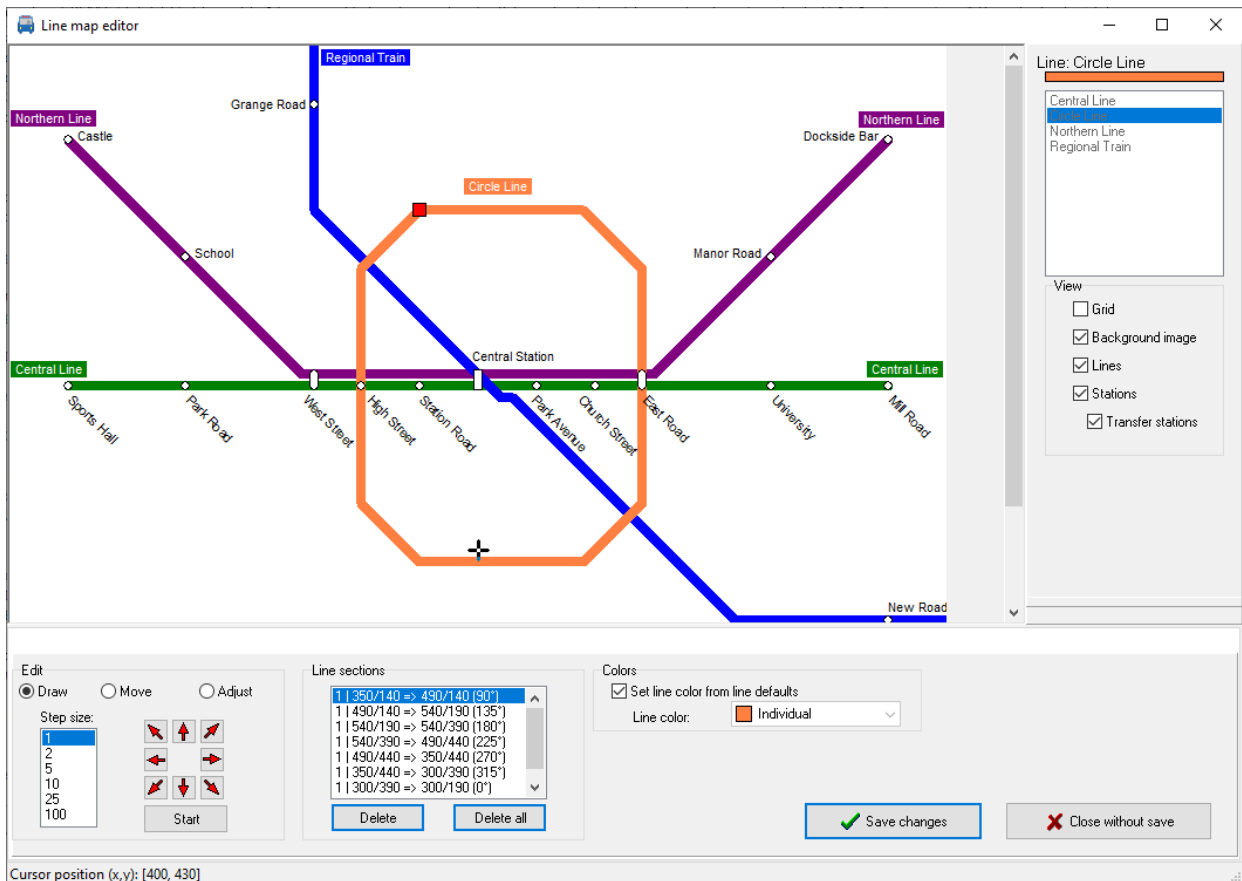
We suggest to use these functions in the given order when creating a new line map.

When selecting one of these functions you can show or hide parts of the line map.



4.3.1. Edit line

Choose a line in the selection window and click on „Edit line” to create or edit line details.



- **Mode:**
 - **Draw:** In Draw mode, you can draw new line segments and delete existing segments.
 - **Move:** In the "Move" mode, you can move previously selected line segments. Stations positioned on the line segments are retained.
 - **Fit:** In the "Adjust" mode you can change the line network by reducing or enlarging individual line segments. Whether stations positioned on the line segments are retained depends on whether they can still be reconstructed after the adjustment.
- **Step size:**

Specifies the number of pixels to move the cursor on each step. The step size will be multiplied with the grid width specified in the line map settings. A step size of 5 on a grid width of 10 moves the cursor for 50 pixels on each step.
- **Start:**

Depending on the selected mode, one click on the "Start" button will begin the selected action.

 - **Draw:**

Click on „Start“ to start to draw a line. Use the cursor keys to draw a line in the given direction. Moving backward over a drawn line will erase the line part. Click on „Stop” to stop the draw mode („Start” will change to „Stop” in draw mode).


If you move to another line segment of the same line while drawing the line, the cursor color changes. If you stop drawing here, the two line segments will be connected. If you continue drawing here, a bridge without connection will be created. In the simulation, the vehicles can only drive over connected line segments.

- **Move:** By clicking the "Start" button you will start moving the previously selected line segments. Subsequently, pressing the arrow keys will move the sections in the corresponding direction.
A click on "Stop" ends the shifting.
- **Adjust:** By clicking the "Start" button you will start to adjust the line at the selected line end. Subsequently, when pressing the two active arrow keys, the line will be reduced or enlarged in the corresponding direction. Normally connected line sections are moved accordingly. Exception: The line sections are connected to both ends of the current line section.
If you move to another line section of the same line while changing the line section, the cursor color will change.
A click on "Stop" ends the adjustment.

- **Cursor buttons:**

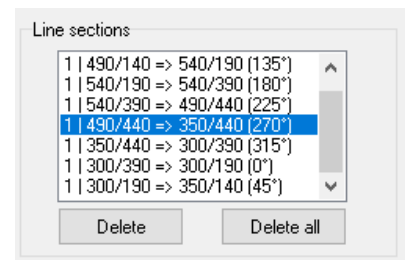
Click one of the cursor buttons to move the cursor in the corresponding direction. In Draw mode you can also position the cursor directly with the mouse if you have not yet started drawing.



 Notice: Use the red cursor buttons (see image) for a more precise positioning on the grid. This is essential for parallel lines with transfer stations.

- **Line sections:**

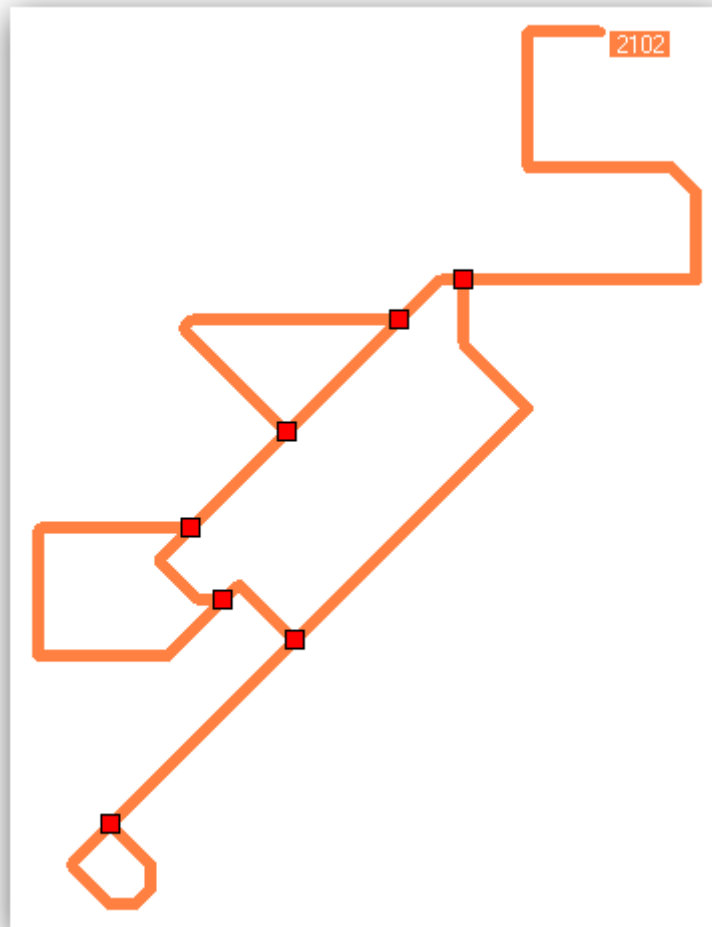
Line sections will be created on every change of direction of a line. Normally, a new section is created for each change of direction as well as for junctions and crossings. For each section the coordinates of start and end and the angle are displayed. Sections can be grouped, and the first number specifies the section group. Sections may change when a line is saved.



- **Draw:**
When drawing, clicking on a line segment places the cursor alternately on the start position, the end position, and the middle position of the segment.
A click on the "Delete" button deletes the marked line segment. With "Delete all" all existing line segments are deleted.
- **Move:**
When moving, you select the sections to be moved.
Clicking the "Select all" button selects all line segments. Clicking the "Deselect All" button deselects all sections.
- **Fit:**
When adjusting, clicking on a line segment places the cursor alternately on the start position or end position of the segment.

To run the simulation correctly it is important that connections are made very exact for lines containing branches.

After saving the line and re-opening it the connections found will be marked with a red square. If connections are not recognized due to imprecise positioning, they need to be re-drawn. Unidentified connections will cause the simulation to fail because of unrecognized connections.



If a vehicle rides back at the same line section the simulation can only find the path if a circle is drawn at the end of a line (see example above) or the station is at the end of a section and the vehicle turns into opposite direction at this point.

-

Set line color from line defaults
Line color: Purple ▼

Line color:


Specify the line color for the current line or activate the check box „Set line color from line default” to use the default color specified in the line defaults for this line map.

-

Vehicle color:

Specify the color for vehicles shown on this line. Activate the check box „Set vehicle color from line default” to use the color specified in the line defaults for this line map. This color will be used for traffic simulation in the web applications.

-

 **Status bar:** When the cursor is visible, the current position (x/y coordinate) is displayed in the status line at the bottom left.

-  **Save changes:**

All changes made to the selected line will be saved.

Individual sections are combined and, if necessary, the direction is swapped. In the case of changed sections, the station positions are adjusted as far as possible. If this is not possible, the stations must be repositioned.

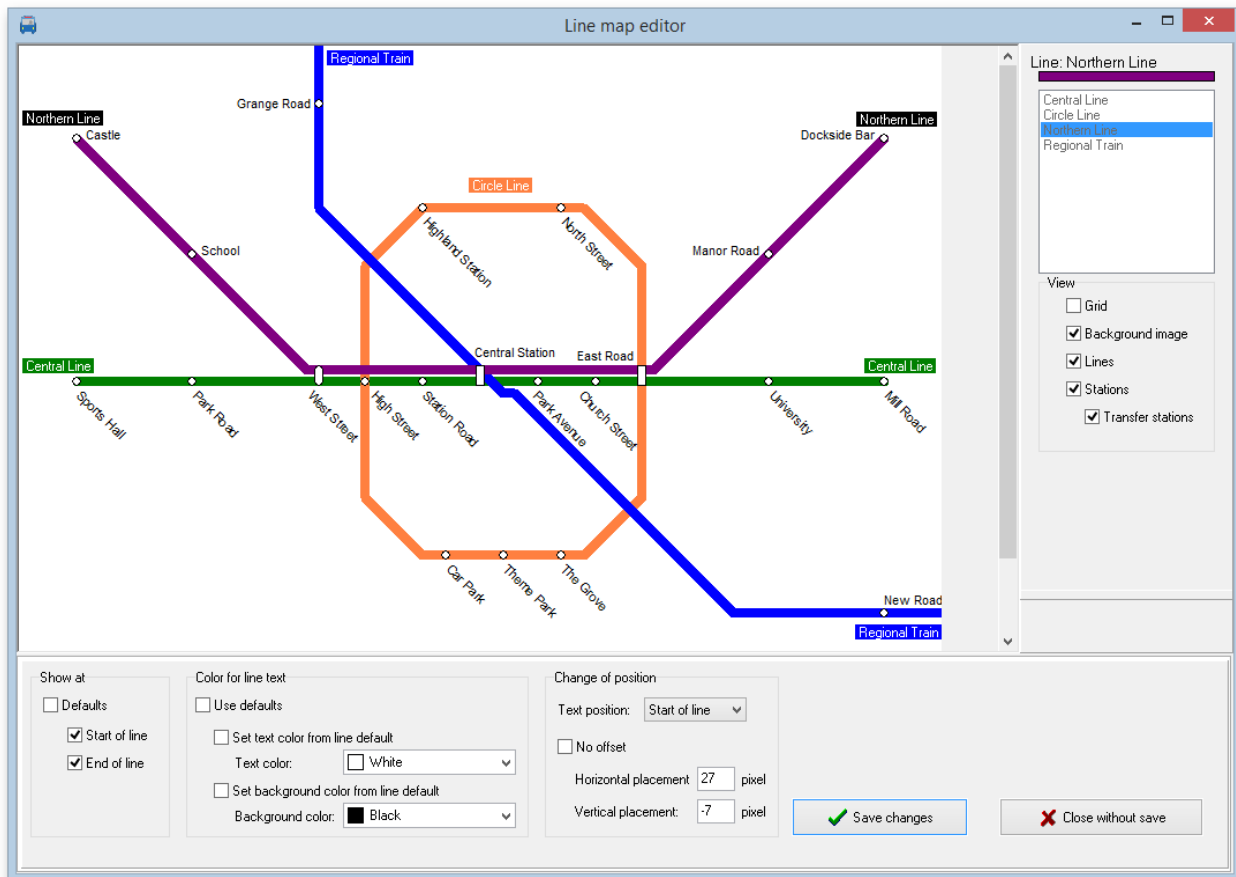


- **Close without save:**

All changes made to the line while editing will be discarded.

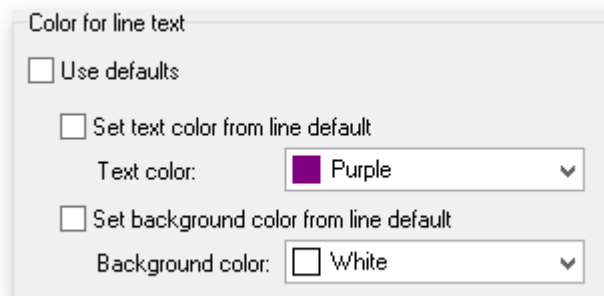
4.3.2. Edit line text

Select one of the lines in the selection window on right upper corner and click on „Edit line text” to change the text properties.



- **Show at:**
You can display the line text and position a line text to the start and/or end of a line. Activate „Use defaults” to use the settings specified in the line defaults for the line map.

- **Color for line text:**
Specify the color for text and text background. Activate the check box „Use defaults” to use the colors specified in the line defaults for this line map.
You can also use the corresponding checkbox to apply the colors from the line settings (see chapter 4.2.2 Defaults for lines)

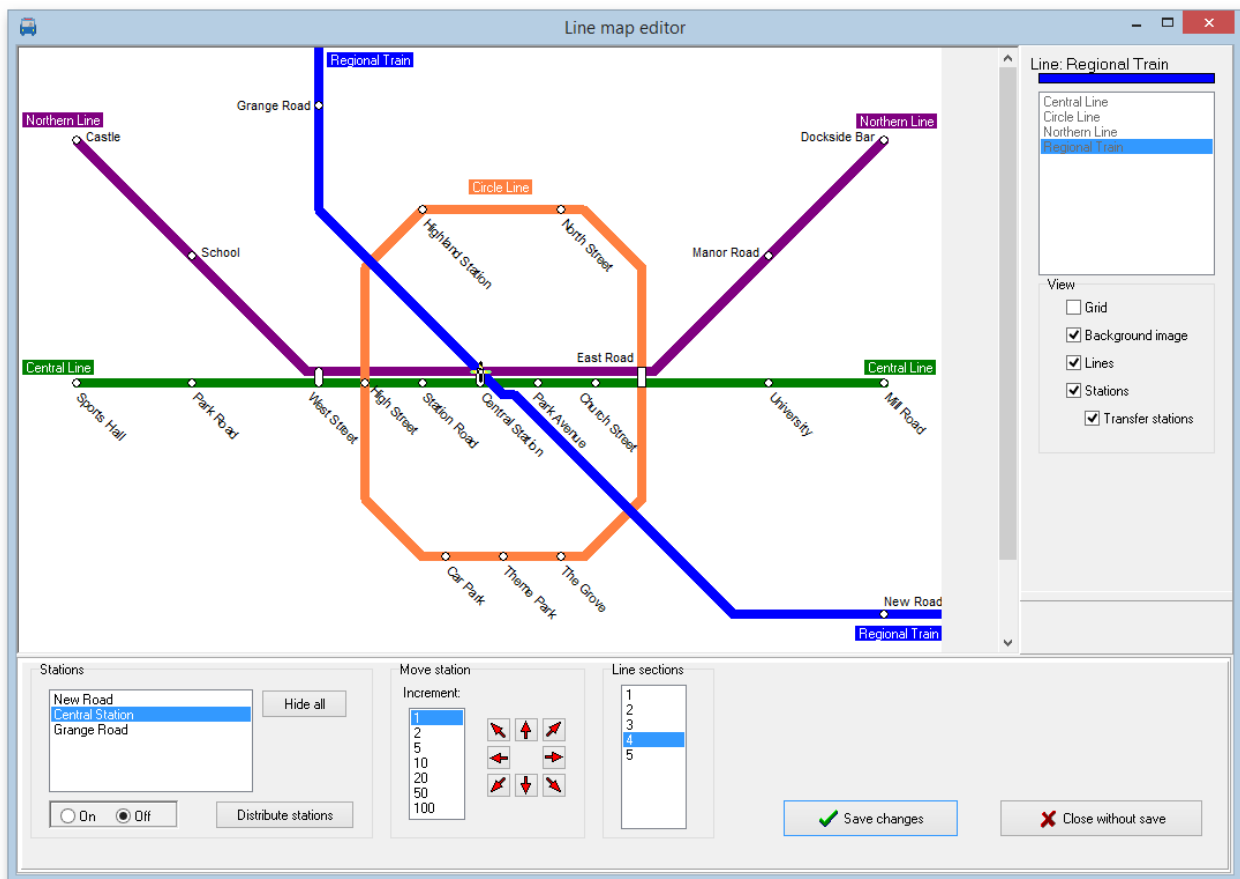



- **Change of position:**
Change the position of text on start and end of line individually. Check „No offset” to leave the text positioning unchanged or specify the text position offset in pixel.

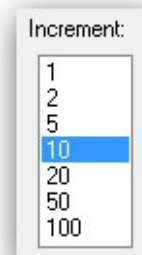
- **Change of position:**
Change the position of text on start and end of line individually. Check „No offset” to leave the text positioning unchanged or specify the text position offset in pixel.
↻ For more complex lines with branches or circular connections, the start and end position depends on when the respective line segments were added. The position of the line texts may have to be moved to the appropriate position here.

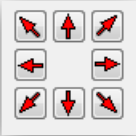
4.3.3. Edit stations

Choose a line in the line selection window and click on „Edit stations” to position stations for this line.

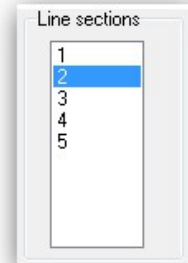



- **Station selection:**
Choose a station in the station window on left lower side to edit station preferences.
- **Show station:**
 You can choose to show or hide a station on the line.
For stations with multiple occurrences along the same line the preferences are used for every occurrence of the station.
- **Hide all:**
This button will hide all stations at once.
- **Distribute stations:**
Click this button to evenly distribute all stations along the line. Already shown and positioned stations will not be changed. This provides for a quick initial setting of stations on the line.
- **Step width:**
You define the number of pixels the cursor moves in one step. This setting will be multiplied by the grid width from Common defaults. Example: Step width of 5px and a grid width of 10px will move the cursor 50px per step.



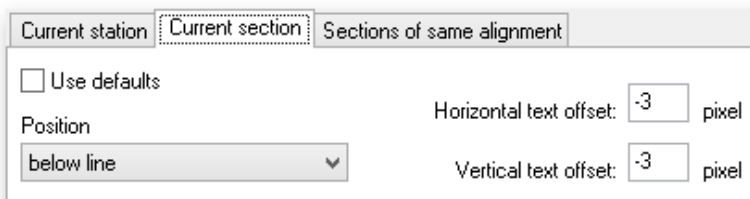
- Cursor buttons:**

 Using this button moves the cursor and also the selected station. The cursor only moves along the actual line section.
- For stations with multiple occurrences along the same line the position is used for every occurrence of the station, thus only one position per station is supported.

- Line section:**
 Choose the active section of the currently active line. Changing the active section will position the selected station in the center of the section chosen.



 When clicking on a line segment, the cursor is placed alternately on the start position, the end position as well as the middle position of the segment.

- Individual text positioning:**



Define individual positioning for the station text at the active line. You can choose to change the individual positioning for the active station, the active section or for all sections with the same direction.

To set individual position data first deselect „use default” check box and change your preferred settings.

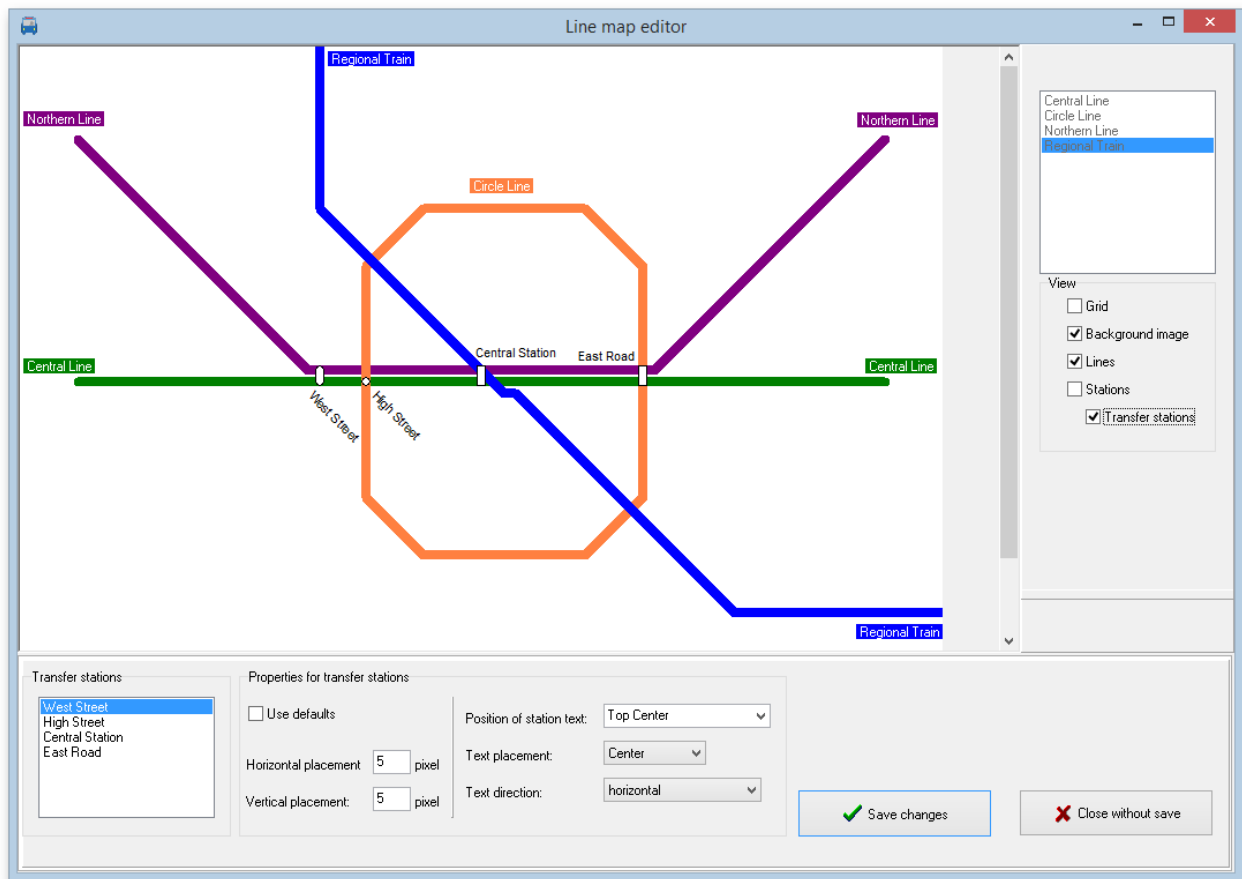
Priority order is „actual station”, then „actual section”, then „sections with same direction”. If nothing is specified here the default settings for the line are used.

- Save changes:**
 All changes made to the selected line will be saved.
- Close without save:**
 All changes made to the line while editing will be discarded.



4.3.4. Transfer stations

Click on „Transfer station” to change preferences for stations with transfer capabilities. This are all stations on more than one line.



Please note that some default settings for transfer stations may have a higher priority than the specifications for an individual one and thus changes made here may have no effect.

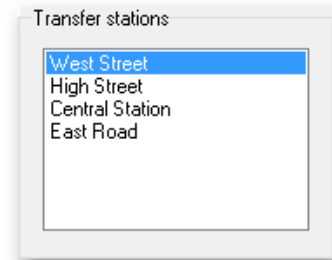
↻ The **“Round symbol for station on the same position”** setting ensures that the font formatting for "normal stations" and a round station symbol are used for the stations concerned.

If the setting **“Apply text alignment, text direction and text spacing from line settings”** has also been selected, the settings of the associated line will be used. Since several lines contain the station, it may be necessary to try out which line is responsible for the station.

↻ If the setting **“Rounded symbol for parallel lines with stations in the same level”** is activated, the settings from the line settings are adopted for the stations concerned. Which line is relevant for this is again determined from the default settings in the "Stations" tab under "Position to line". For example, with the setting "above" for horizontal lines, the line settings of the uppermost line are used, with the setting "below" the settings of the lowest line are used.

- Round symbol for station on the same position
- Apply text alignment, text direction and text spacing from line settings.
- Rounded symbol for parallel lines with stations in the same level

- **Station selection:**
Select a station in the station list window.



- **Use default:**
To activate individual settings for the selected transfer station this check box must be unchecked.

Horizontal placement: pixel
Vertical placement: pixel

- **Offset:**
You can shift the station text horizontal and vertical. Use negative numbers for opposite directions.

- **Text position:**
This is the position of station text related to the station symbol.

Position of station text:
Text placement:
Text direction:

- **Text alignment:**
Define the text alignment for station text. This can be freely chosen for text positions „Upper middle” and „lower middle”.

- **Text direction:**
Choose the direction of the station text. The possible selections depend on the selections of Text position and alignment.

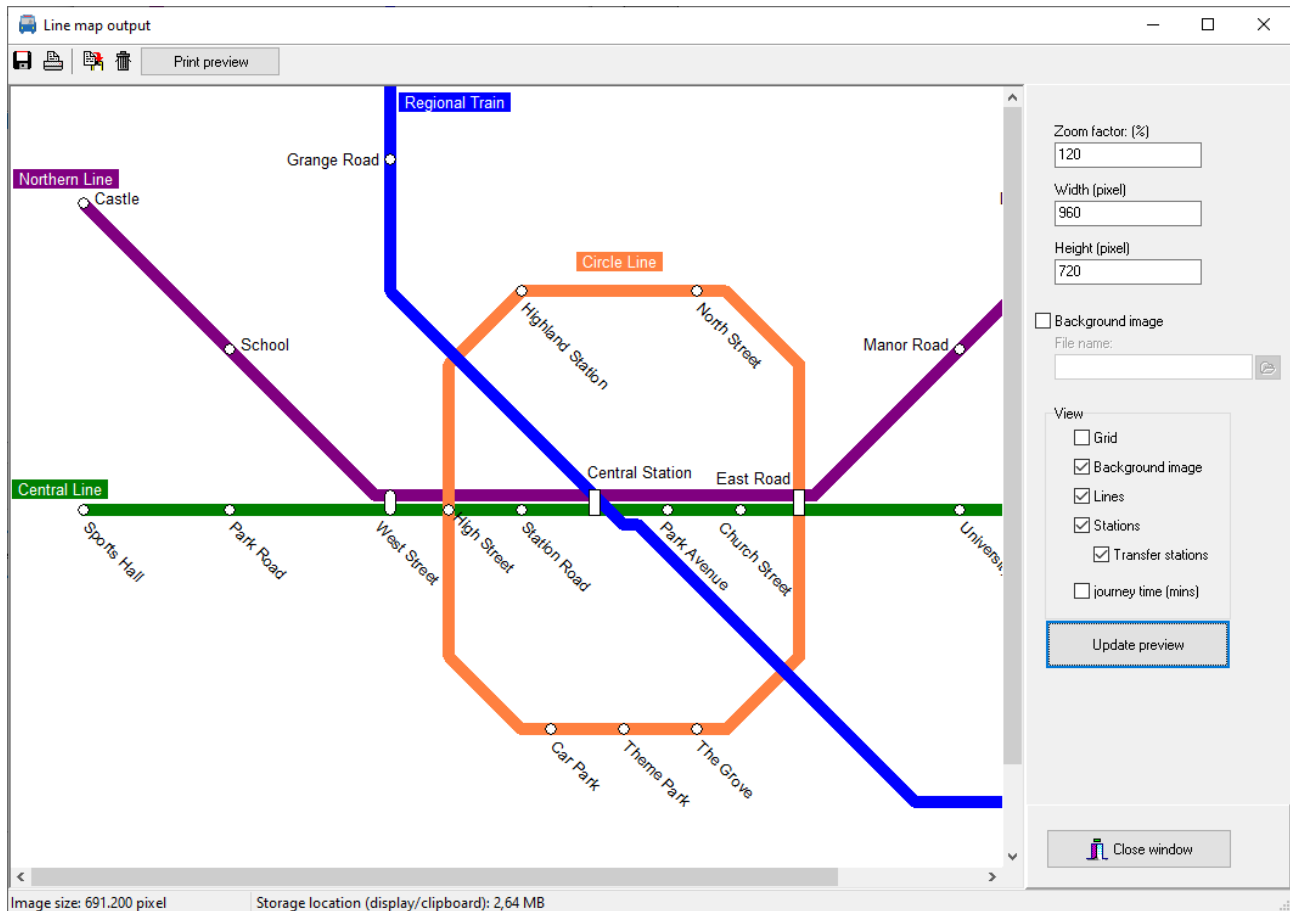
- **Save changes:**
All changes made to the selected line will be saved.

- **Close without save:**
All changes made to the line while editing will be discarded.

4.4. Line map output

Using the output module your route maps created using the line map editor

PTraffic ProPlus can be scaled, saved and printed. Select your line map and press the button “Line map output”.



The output module of PTraffic ProPlus has the following options:

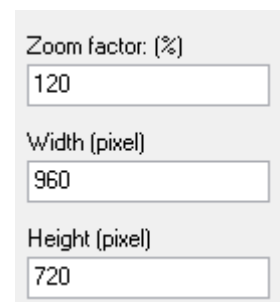
- Changing the size (scaling) of the line map.
- View or hide elements of the line map from display.
- Copy the line map into windows clipboard for further processing with other software like image editing programs.
- The line map can be saved as image file.
- The line map can be printed.

4.4.1. Line map scaling

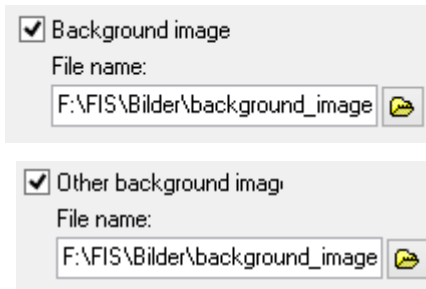
Line maps can be scaled in size. During this process the line map is redrawn in the required size and text size is adapted too.


Note: Bitmap fonts cannot be scaled without loss of quality. In case of quality problems please try to use other fonts.


To change the output size, you can use a zoom factor, width or height. Changing one value will automatically adapt the other values to keep the proportions.



4.4.2. Background image



Background image
File name:
F:\FIS\Bilder\background_image 

Other background image
File name:
F:\FIS\Bilder\background_image 

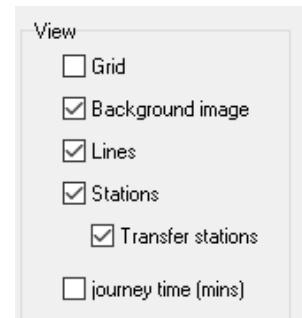
You can add a background image to the output. The image must be available in Windows Bitmap (BMP) format.

If you defined a background image at creation of the line map you can change the image here. The background image is not included in the scaling process thus it may be required to have a background image of the desired size.

4.4.3. View options

View options can be used to show or hide elements from the line map output. As example a line map showing only transfer stations can be created. The grid is hidden from the output by default since the grid is supposed to be used for easier drawing.

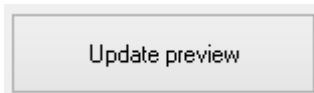
With the option "Travel time (min.)" you can display the travel times in minutes between 2 stations of the same line. If there are different travel times between the stations, the shortest travel time is displayed. Travel times between stations that do not directly follow each other are also displayed if there are journeys that do not call the stations in between.



View


- Grid
- Background image
- Lines
- Stations
 - Transfer stations
- journey time (mins)

4.4.4. Update the preview




Click the button „Update Preview“ to show the updated line map using the changed view options. The line map is then ready to be printed, stored or copied to the clipboard.

4.4.5. Save the line map

 Click the save icon to save the line map in JPG or BMP format.

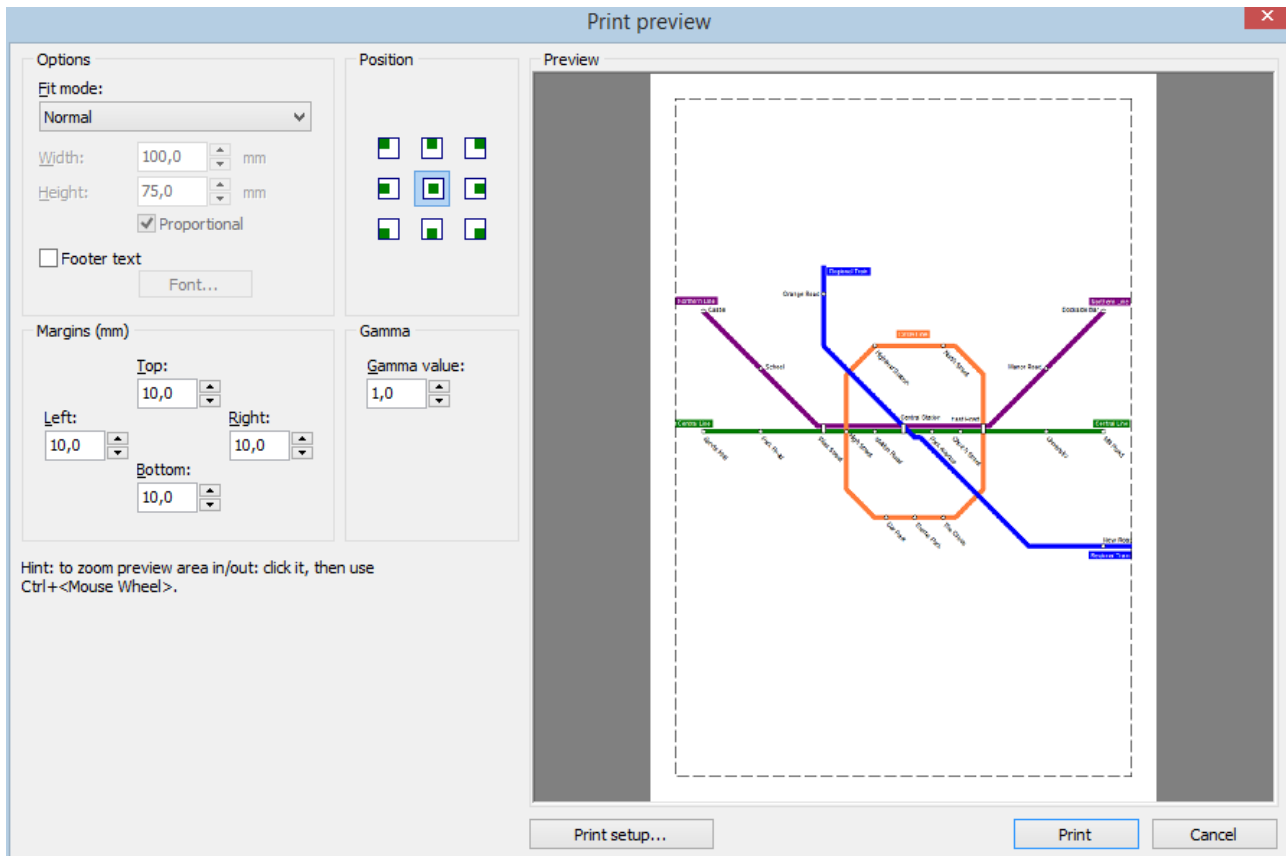
4.4.6. Print the line map

 Click the print icon to print your line map. Please note that higher resolution is required for printing and select your image size accordingly. We suggest using 3508x2480 pixels for printing of an DIN A4 (297x210mm) wide paper at 300dpi.

4.4.7. Print Preview

Print preview

When printing you will first get a print preview where you have several options to control your printed line map.



The right side shows a preview of the page. If you hold down the <CTRL> key or the left mouse button, you can zoom in and out with the scroll wheel of your mouse.

You have the following options to adjust the printout:

Options

- **Fit mode**

You can specify how the graphic should be adapted to the page size:

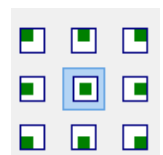
- **Normal:** The graphic will be printed in its original size. If the graphic is too large for the page the graphic will be adapted to the page size
- **Best fit to page:** The graphic is scaled to page size but retains the proportions (width to height ratio).
- **Stretch to page:** The graphic is scaled in height and width to page size. Proportions may be changed to fit the image to the page size.
- **Custom size:** The user can determine the size of the printout. You can set whether the proportions are maintained.

- **Footer text**

Here you can specify whether the name of the line map plan is to be printed in the footer. In this case, the font type and size can also be specified.

- **Position**

The alignment of the graphic can be set here. The effect of the selected alignment depends on the Fit Mode settings. With Stretch to page, for example, the position is not relevant because the graphic is always zoomed to the entire page size.



- **Margins**
Under Margins (mm), the margins can be adjusted individually in millimeters for all 4 sides.
- **Gamma**
Here you can change the gamma value. The gamma value describes the contrast ratio (i. e. the contrast from light to dark). Normally, the default value of 1.0 does not need to be changed. An overview of gamma correction can be found under https://en.wikipedia.org/wiki/Gamma_correction

Printer Setup

Here you can select another printer and make various printer settings such as print size and orientation (portrait or landscape).

Print

Press the Print button to print your line map.

Cancel

By pressing the Cancel button, you can exit the print preview window without printing the line map.

4.4.8. Copy the line map



Click at the copy icon to copy the line map into the clipboard. The image can then be inserted into other software for further use.

4.4.9. Delete preview



Click at the delete icon to delete the preview. Deleting the preview frees working storage that can be a remarkable amount of memory.

An image with a size of 10.000x10.000 pixels require 400MB of memory. A copy into the clipboard additionally requires the same amount of memory. Inserting the image into another Software uses again memory of adequate size. Deleting the view will free the memory used by PTraffic ProPlus.



Hint: To save additional memory you can delete the line map image from the clipboard if this is no longer used. To achieve this, copy the already deleted image again into the clipboard to clear it.

5. Journey planner

Start the journey planner from the main window to query about your network.

Specify required parameters and press „Start query”.

Sorting of the result is by showing the quickest connections in first position. If the arrival time is the same, later departures precede earlier departures for slower connections. If multiple connections have the same departure and arrival time those with fewer changes are displayed first.

For queries that are estimated to last over a longer period of time a progress indicator will be displayed.

The screenshot shows the 'PTraffic Pro - Timetable information' window. The search parameters are: Start: New Road, Day: Monday to Friday, Departure: 12:00 PM, Target: North Street, Search depth: 1000, and Maximum transfers: 5. The search time is 00:00:09, and it ended because of search-depth 572. The results show five connections, each with a total arrival time and pure driving time, followed by a list of train lines and their respective departure and arrival times.

Search time: 00:00:09 - Search ended because of search-depth 572

Connections:

- Arrival in 166 minutes, Pure driving time: 100 minutes
Regional Train: New Road to Central Station, departure: 12:40 PM, arrival: 01:20 PM
Central Line: Central Station to East Road, departure: 01:31 PM, arrival: 02:01 PM
Circle Line: East Road to North Street, departure: 02:16 PM, arrival: 02:46 PM
- Arrival in 196 minutes, Pure driving time: 100 minutes
Regional Train: New Road to Central Station, departure: 12:40 PM, arrival: 01:20 PM
Central Line: Central Station to East Road, departure: 01:31 PM, arrival: 02:01 PM
Circle Line: East Road to North Street, departure: 02:46 PM, arrival: 03:16 PM
- Arrival in 196 minutes, Pure driving time: 90 minutes
Regional Train: New Road to Central Station, departure: 12:40 PM, arrival: 01:20 PM
Northern Line: Central Station to East Road, departure: 02:20 PM, arrival: 02:40 PM
Circle Line: East Road to North Street, departure: 02:46 PM, arrival: 03:16 PM
- Arrival in 210 minutes, Pure driving time: 120 minutes
Regional Train: New Road to Central Station, departure: 12:40 PM, arrival: 01:20 PM
Central Line: Central Station to High Street, departure: 01:24 PM, arrival: 01:44 PM
Circle Line: High Street to Highland Station, departure: 02:00 PM, arrival: 02:30 PM
Circle Line: Highland Station to North Street, departure: 03:00 PM, arrival: 03:30 PM
- Arrival in 226 minutes, Pure driving time: 100 minutes
Regional Train: New Road to Central Station, departure: 01:40 PM, arrival: 02:20 PM
Central Line: Central Station to East Road, departure: 02:31 PM, arrival: 03:01 PM
Circle Line: East Road to North Street, departure: 03:16 PM, arrival: 03:46 PM

Maximum 5 Show connections Maximum search time 15 second Filter...

- **Start:**
Choose your starting station.
- **Destination:**
Choose your destination station.
- **Day:**
Choose the day or day group of travel. The day groups may be changed in the project options. If day groups overlap (Example: Monday-Friday and Tuesday-Thursday) only single days are presented for selection.
- **Search depth:**
Usually the best connection will be found by little search depths.
- **Departure:**
Choose your preferred time of departure.

- **Maximum transfers:**
Define the maximum of transfers between lines you want to accept.
- **Maximum number of connections:**
Define the maximum number of connections are displayed.
- **Maximum search time:**
Define the time period used for the search process. Search will end after this period and the search depth will be displayed at the begin of the list.
- **Showing AM/PM instead of 24 hour clock**
The English version of PTraffic allows to display time values in 12 hour format (AM/PM). The setting also applies to the timetable of connections and for the graphical connection overview.

```
Search time: 00:00:16
Search ended because of search-depth 395
Connections:
```



Save

The connections found will be saved in text format.



Print

The connections found will be printed.

5.1. Optimizing search time

Most of line networks will provide for a very short search time on usual PC's, so a change to the search period will not have much of effect.

Using large line maps or slow PC's may you force to make use of some settings.

Rising the search depth will increase the time for search. If all connections are already found on low values, the higher value is ignored and has no effect.

Lowering the value for maximum transfers will decrease the time used for search.

Some impact is also given by specifying the maximum number of connections. Let's have an example:

Choosing to display only 1 connection and this one has a travel time of 30 minutes we stop the search for all connections longer than 30 minutes, while displaying 10 connections and the 10th has 50 minutes of travel time we may investigate for much more connections to reduce the travel time.

5.2. Connection Table

Click the table symbol to create a connection table of the results found in the journey planner.

PTraffic 12:00: New Road -> North Street [Connection timetable]

Number of connections: 10

Sort by:

- Connections
- Departure time

Draw connecting lines

Use line colors

Light colors inverse

Start

	1	2	3	4	5	6	7	8	9	10
New Road	12:40	12:40	12:40	12:40	13:40	12:40	12:40	13:40	13:40	13:40
Central Station	13:20	13:20	13:20	13:20	14:20	13:20	13:20	14:20	14:20	14:20
Central Station	13:31	13:31	14:20	13:24	14:31	14:20	13:24	14:31	15:20	14:24
East Road	14:01	14:01	14:40		15:01	14:40		15:01	15:40	
East Road	14:16	14:46	14:46		15:16	15:16		15:46	15:46	
High Street				13:44			13:44			14:44
High Street				14:00			14:00			15:00
Highland Station				14:30			14:30			15:30
Highland Station				15:00			15:30			16:00
North Street	14:46	15:16	15:16	15:30	15:46	15:46	16:00	16:16	16:16	16:30

Click to save the connection table as JPEG graphic.

Click to print the connection table

The connection table view allows the following options:

- **Number of connections**
Is the number of connections shown from the search results.
- **Sort by**
Sort the connections displayed either by the connection number (image above) or by departure time (image below). Sort by connection will show one connection per column.

Sorting by departure time creates a compact connection table where partial connections will be shown only once. They will be sorted by departure time to give a quick reference of connection available at a certain station.

	1	2	3	4	5	6	7
New Road	12:40	13:40					
Central Station	13:20	14:20					
Central Station	13:24	13:31	14:20	14:24	14:31	15:20	
East Road		14:01	14:40		15:01	15:40	
East Road		14:16	14:46		15:16	15:46	
High Street	13:44			14:44			
High Street	14:00			15:00			
Highland Station	14:30			15:30			
Highland Station	15:00			15:30			16:00
North Street	15:30	14:46	15:16	16:00	15:46	16:16	16:30

The departure time is shown either below or to the right of a specific arrival time. Additional sort parameters are given per table columns. Using additional sort parameters may result in additional rows displayed.

- **Sort by time**

Times within table columns will be sorted.

- **Arrival and departure time**

The same or a later departure time will be shown for each station. If there is an arrival, but no departure time there may be a previous departure time shown. This can be shown in the example: Departure 12:23 is earlier than the arrival time 12:24 above (picture right).

If there are no empty cells within columns this will be essentially the same arrangement as the previous one. The example shows empty cells between the first and second ride – so this column is sorted by arrival and associated departure time.

- **No sort**

Times within columns will not be sorted and may result in departure times previous to the arrival time to be shown. See above example where for „Central Station“ there is a departure time (13:31) before the arrival time in the same column. To find the next possible departure time you need to look further (like 14:20 or 14:24, depending on transfer time).

11
12:11
12:24
12:23
12:26
12:27
12:33

- **Draw connecting lines**

A connecting line will be drawn between arrival and departure time.

- **Use line colors**

Use the line colors as defined for the line to use for times and connection lines.

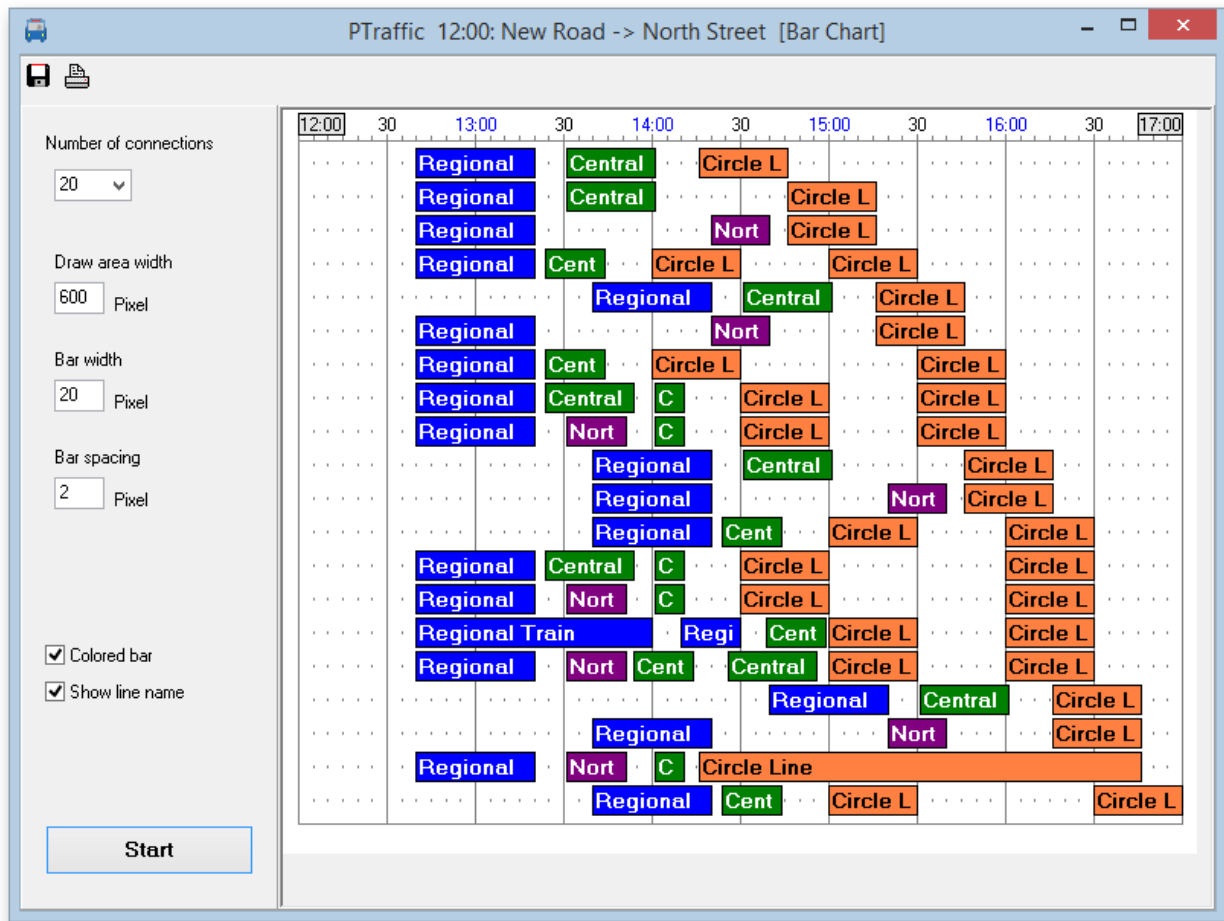
If you sort by departure time a compacted connection table showing parts of the connections only once will be created.


If you use the check box „Inverse light colors“, the font color will be black and line color will be used for background in case of light colors.


Click the Start button to create a connection table using your chosen settings.

5.3. Graphical Connection View

Click the bar chart symbol to create a graphical connection view. This view will show the connections found as bar chart.



 Click to save the connection table as JPEG graphic.

 Click to print the connection table

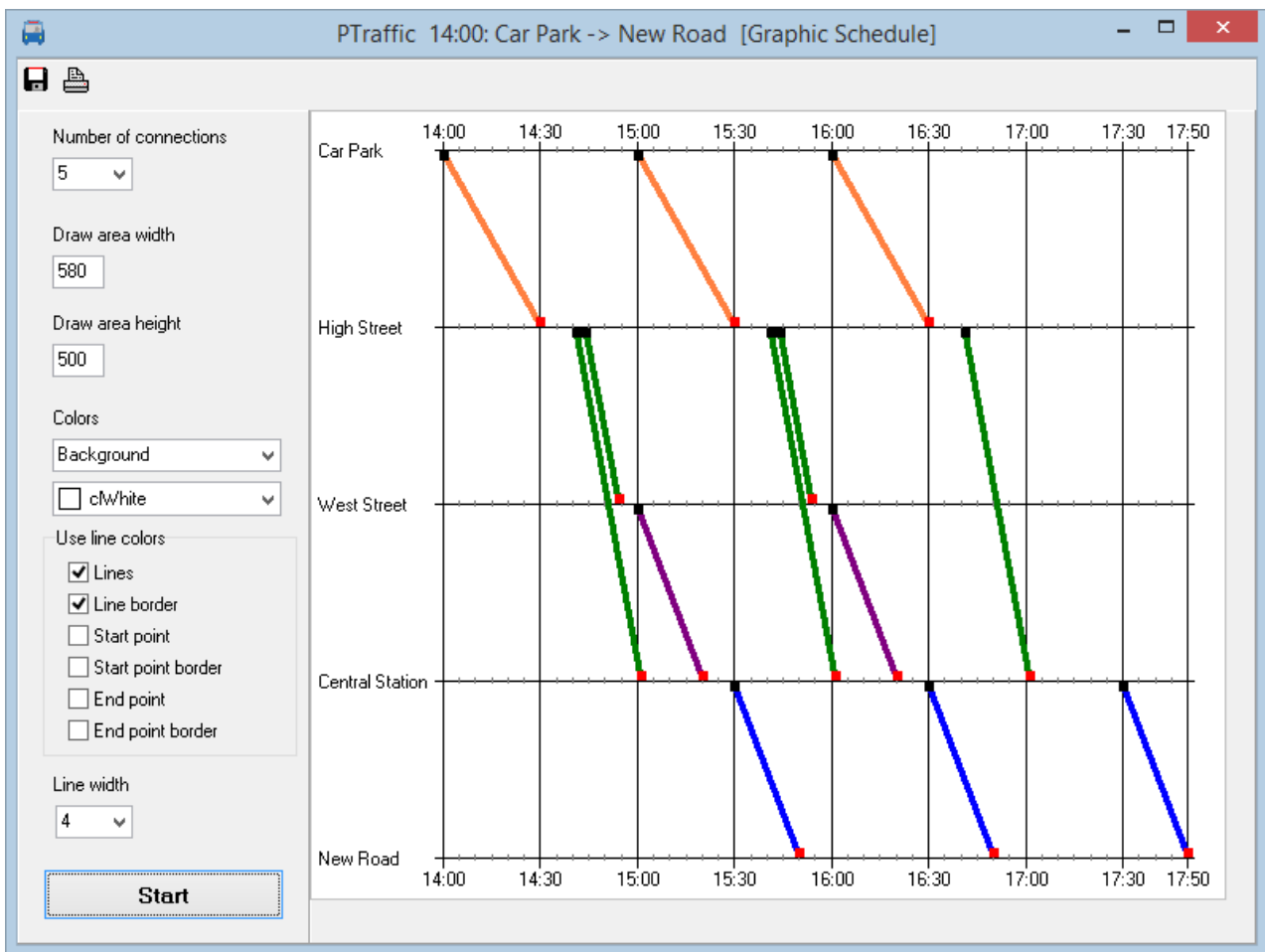
To customize your graphic, use the following options:

- **Number of connections shown**
Enter the number of connections shown from the search results.
- **Draw area width**
Specify the width of the whole graphic in pixels.
- **Bar width**
Width of the bars in pixels (actual this is the height of the bars in the horizontal bar chart).
- **Bar spacing**
Specify the vertical distance between the bars.
- **Colored bar**
When checked the bars will be filled in the same color as defined for the line color. The font color will be either white or black, depending on the luminance of the fill color.
If unchecked the bars will be shown white with black borders and black font.
- **Show line name**
Check to show the line name within the bar. To show the line name you need to specify a minimum of 16px in the bar width setting. If the text doesn't fit within the bar it is truncated to the right side. To show more of truncated text you need to increase the draw area width.

Press start to create the connection table view using the specified options.

5.4. Service Planning Diagram

Click the Service Planning Diagram icon to create a Service Planning Diagram. This view will show the connections found as Path-Time diagram and provides for an excellent overview of the connections found.



 Click to save the Service Planning Diagram as JPEG graphic.

 Click to print the Service Planning Diagram.

To customize your graphic, use the following options:

- **Number of connections shown**
Enter the number of connections shown from the search results.
- **Draw area width**
Specify the width of the whole graphic in pixels.
- **Draw area height**
Specify the height of the whole graphic in pixels.

- **Colors**

Specify color preferences for elements of the Service Planning diagram. Color preferences may be set for the following elements:

- Background: Color for the background
- Station text: Color for station names
- Time text: Color for time display
- Station line: Color for the horizontal lines per station
- Time line: Color for the vertical lines for the time schedule
- Time steps: Color for the short vertical line at the station lines showing detailed time schedules
- Start point: Color to fill the start point of a line
- Start point border: Color for the border of the start point of a line
- End point: Color to fill the end point of a line
- End point border: Color for the border of the end point of a line
- Line: Color to fill the line
- Line border: Color for the border of the line

- **Use line color**

This is to specify that the actual preferences for line colors is to be used. Previously defined colors for lines will be ignored for activated lines.

- **Line width**

Specify the width of lines (in pixels) to be used in the drawing.

Press start to create the Service Planning Diagram view using the specified options.

5.5. Filter

Filters can be used to reduce the number of displayed results for a planned journey. By default, search results are reduced by omitting connections that are not quite meaningful. The Filter may be adapted to your personal requirements by specifying various parameters in the Connection Filter dialogue. Disabling all filters result in display of all possible connections found.

The screenshot shows a window titled "Connection Filter" with a bus icon in the top-left corner. The window contains the following settings:

- General**
 - Show connections with redundant courses
 - Show connections with multiple visits of transfer stations
 - Show connections with multiple visits of self stations
 - Show connections with multiple occurrences of self lines
 - Show connections with multiple occurrences of self courses
- Same line route + Same arrival time**
 - Show all connections
 - Show one connections per departure time for all connections with same transfer stations
 - Show one connection per departure time
 - Show the latest connection for all connections with same transfer stations
 - Show latest connection
- Selection at several found connections**
 - Preferably connection with transfer time of minutes
 - Connection with shortest total driving time (whithout transfer time)
 - Connection with longest total driving time (whithout transfer time)
 - Connection with earliest sub-connection at first sub-connection with different departure time
 - Connection with latest sub-connection at first sub-connection with different departure time
 - Connection with earliest sub-connection at first sub-connection with different arrival time
 - Connection with latest sub-connection at first sub-connection with different arrival time

A "Restore defaults" button is located at the bottom right of the dialog.

Pressing „Restore defaults” will restore all filters to the installation default.

5.5.1. Description of filters

General specifications

- **Show connections with redundant courses**

Display connections even if they are surplus.

Example:

1. *Arrival in 10 minutes, in-motion time: 6 minutes*
U2: Park Road to East Road, departure: 18:36 arrival: 18:42
2. *Arrival in 15 minutes, in-motion time: 8 minutes*
U2: Park Road to Theme Park, departure: 18:36 arrival: 18:38
S1: Theme Park to East Road, departure: 18:41 arrival: 18:47

Activating the filter causes suppression of the display of the second connection since a change to line S1 is treated unnecessary because there is no advantage by means of travel time or arrival station.

Most of such connections are detected and their display is omitted.

- **Show connections with multiple visits of transfer stations**

Selection of this option is only possible if connections with redundant courses are displayed (see above) and is to be considered experimental. A search for departure at "Church Street" to "Dockside Bar" gave the connection:

"Church Street -> S1 -> Central Station -> S2 -> High Street -> S3 -> Central Station -> S4 -> Dockside Bar"

The station „Central Station” would be approached twice for a change.

- **Show connections with multiple visits of same station**

Considered as being experimental. It may display connections with multiple visits to the same station.

- **Show connections with multiple visits of same line**

Show connections where a single line is multiply used.

Examples:

1. *"Church Street -> S1 -> Central Station -> S2 -> Manor Road -> S1 -> Dockside Bar"*
2. *"Church Street -> S1 -> Central Station -> S1 -> West Street -> S2 -> Dockside Bar"*

- **Show connections with multiple visits of same courses**

This option can only be used if „Show connections with multiple visits of same line” is selected (see above). It will display connections where one changes back into a vehicle that has been left earlier at another station.

Same line route + same arrival time

Here you select the display of connections if the same line route is used and the arrival time is identical.

Examples for same line routes and identical arrival time:

1. *School departure: 12:00 -> S1 -> arrival: 12:30 Central Station
Central Station departure: 13:00 -> S2 -> arrival: 13:30 Castle
Castle departure: 14:00 -> S3 -> arrival 14:30 Sports Hall*
2. *School departure: 12:00 -> S1 -> arrival: 12:30 Central Station
Central Station departure: 13:15 -> S2 -> arrival: 13:45 Castle
Castle departure: 14:00 -> S3 -> arrival: 14:30 Sports Hall*
3. *School departure: 12:15 -> S1 -> arrival: 12:45 Central Station
Central Station departure: 13:00 -> S2 -> arrival: 13:30 Castle
Castle departure: 14:00 -> S3 -> arrival: 14:30 Sports Hall*
4. *School departure: 12:15 -> S1 -> arrival: 12:50 Zoo
Zoo departure: 13:10 -> S2 -> arrival: 13:30 Castle
Castle departure: 14:00 -> S3 -> arrival: 14:30 Sports Hall*

- **Show all connections**

All connections found will be displayed.

This causes a large amount of extra connections to be displayed and thus is considered for experimental use.

- **Show one connection per departure time for all connections with the same transfer stations**

The departure time for this function is the departure time from the first station (the one to start at).

From the samples above connections 1 and 2 would be eligible, since they both start at 12:00 and use the same transfer stations. Which one of those 2 connections would be on display depends on the selection made under „Selection at several found connections” - see below.

Connection 3 would be included because the departure time is different from journey 1 and 2. Connection 4 has the same departure time, but has different transfer stations and therefore will be displayed too.

- **Show one connection per departure time**

Only one connection per departure time will be eligible, independent from transfer station used.

From the samples above one of the connections 1 and 2 and one of connections 3 and 4 would be eligible to be included in the result. Which one of those connections would be on display depends on the selection made under „Selection at several found connections” - see next paragraph.

- **Show the latest connection for all connections with same transfer stations**

In our Examples above connections 1-3 use the same transfer stations. Since connection 3 has the latest departure time (12:15) only this one would be displayed for examples 1-3.

Connection 4 would be on display too because it uses different transfer stations.

- **Show latest connection**

From the examples above connections 1 and 2 would not be eligible because of their early departure time (12:00).

From examples 3 and 4 only one would be eligible for display because of their equal departure time (12:15). Which one of those connections would be on display depends on the selection made under „Selection at several found connections” - see below.

Selection of several found connections

Here you make the final decision for the displayed result if one of the previous options produce multiple results. If „Show all connections” is used above, this selection box will be disabled, and all connections found will be on the resulting display.

If there are still multiple connections after applying these filters then the connection used in display is unpredictable, since all resulting connections are considered to be equal by means of the filters specified.

- **Prefer connections with a minimum transfer time of [x] minutes**

The number of minutes [x] may be set to your choice.

The connection shown will be the one with the transfer time nearest to your specification.

Only connections will be searched that allow the minimum transfer time specified.

If no connection is found matching the minimum transfer time the connection with the next shorter transfer time is shown.

Example for a transfer time of 5 minutes specified:

Connection 1 transfer times: 1: 3, 5, 8, 3

Connection 2 transfer times: 2: 2, 5, 4, 2

Connection 3 transfer times: 3: 4, 9, 4, 4

Since none of the above samples contain transfer times that are 5 minutes or greater for ALL transfers, connections 3 will be show in the result, since it has the nearest of the shorter transfer time (4 minutes) for all transfers. For connection 1 this value would be 3, for connection 2 it would be 2 minutes.

- **Connection with shortest in-motion time (transfer times excluded)**

The connection having the shortest in-motion time will be eligible for display.

From the examples used under „**Same line route + same arrival time**” above connection 4 would be displayed in the result since the in-motion time is 1h 25 min compared to 1h 30min of the others.

- **Connection with the longest in-motion time (transfer times excluded)**

The connection having the largest in-motion time will be eligible for display.

From the examples used under „**Same line route + same arrival time**” above connections 1-3 would be considered since the in-motion time is 1h 30 min compared to 1h 25min of connection 4.

Since the 3 connections are considered identical according to the filter it is unpredictable, which one will be displayed.

- **Connection with earliest sub-connection at first sub-connection with different departure time**

A sub-connection is part of the total travel within one vehicle, that's „departure -> line -> arrival”. The departure time of the first sub-connection (the start) is not considered here.

From the examples used under „**Same line route + same arrival time**” above connection 1-3 would be eligible, since the departure of the second sub-connection is at 13:00, while in connection 2 this is at 13:15 and connection 4 departure is at 13:10.

Since the 2 connections are considered identical according to the filter it is unpredictable, which one will be displayed.

- Connection with latest sub-connection at first sub-connection with different departure time**

A sub-connection is part of the total travel within one vehicle, that's „departure -> line -> arrival”. The departure time of the first sub-connection (the start) is not considered here. From the examples used under „**Same line route + same arrival time**” above connection 2 would be eligible, since the departure is at 13:15, while others are at 13:00 and 13:10 respectively.
- Connection with earliest sub-connection at first sub-connection with different arrival time**

A sub-connection is part of the total travel within one vehicle, that's „departure -> line -> arrival”. The departure time of the last sub-connection is not considered here. From the examples used under „**Same line route + same arrival time**” above connection 1 and 2 would be eligible, since arrival of the first sub-connection is at 12:30 compared to 12:45 and 12:50 of the others.

Since the 2 connections are considered identical according to the filter it is unpredictable, which one will be displayed.
- Connection with latest sub-connection at first sub-connection with different arrival time**

A sub-connection is part of the total travel within one vehicle, that's „departure -> line -> arrival”. The departure time of the last sub-connection is not considered here. From the examples used under „**Same line route + same arrival time**” above connection 4 would be shown, since arrival of the first sub-connection is at 12:50, compared to 12:30 and 12:45 of the others.

6. Browser-Applications

PTraffic ProPlus already contain some modules that uses the default Web Browser of your system. This has been tested using the main browser applications and Windows 7 and Windows 8 operating system. Due to different versions and settings (especially in older browsers) various problems may show up. If so, please use the most actual version of your browser or try a different one.

🔄 Unfortunately, it sometimes happens that browser or operating system updates are made changes that lead to errors on the website. As far as possible, the program will then be adapted accordingly with the next update.

The Web-applications will be started by clicking at the globe icon in the main window.



The following applications are available:

- **All Stations**
Show all stations.
- **All Lines**
Show all lines.
- **Course of a Line**
Show all stations for a selected line.
- **Timetables**
Show timetables for a selected line.
- **Actual rides**
Show current rides for a certain time on a selected line.
- **Timetables for period**
Show rides for a selected line in a given period.
- **New: Graphic schedule**
Displays a graphical representation of the schedule for a line for a specified time interval. Colors, size and day of week may be specified individually.
Hint: Most browsers allows to print or save the graphic schedule by right clicking the schedule graphic and select „Display graphic” or „Save graphic as...”).
- **Timetable for stations**
The timetable for stations shows rides from a station for a selected line, direction and days of travel.
- **Departure plan**
The departure plan shows actual rides for a previously selected station for a period of time.
- **Departure board**
The departure board shows the actual rides for a selected station for a period of time. The departure board will be updated on a regular basis.
- **Information for passengers**
Show passenger information for a selected line.
- **Line Maps**
Display the created line maps
- **Simulation**
Create a traffic simulation from the line map and associated time tables.

6.1. How to make projects available on the internet

You can use PublicSQL and JavaScript to create your own Web-Applications for your PTraffic ProPlus projects.

To publish your project at the internet you can create web-sites including the required browser applications with „Create website” in the project menu.

Choose a folder to store the website files.

For project files and HTML files (including style sheet and java-script) you can choose to copy. If you made individual changes to some files you can then avoid copying them to keep your modifications.

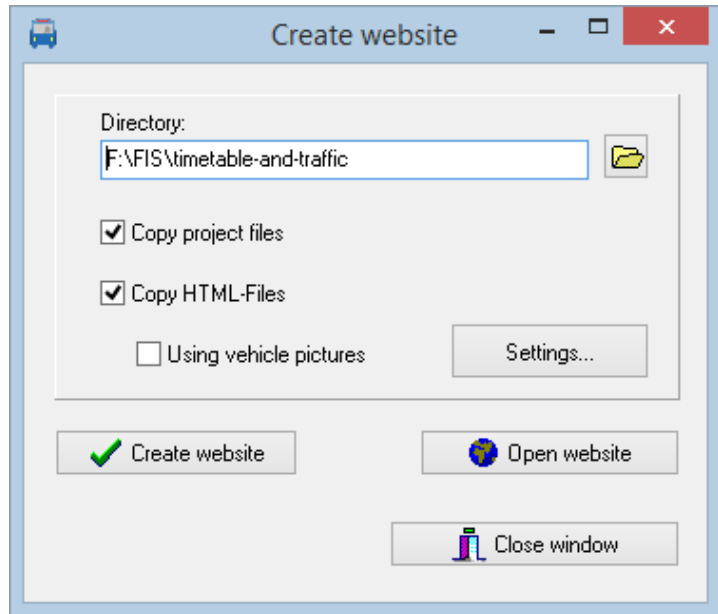
If you have selected "Copy HTML Files" you can also select the option "Using vehicle pictures". You can then create your own vehicle pictures which will be used for the simulation instead of the colored squares. You define the details under "Settings..." (see next chapter).

Click „Create website” to copy necessary data into your folder. Click „Show website” to open the website in your default browser.

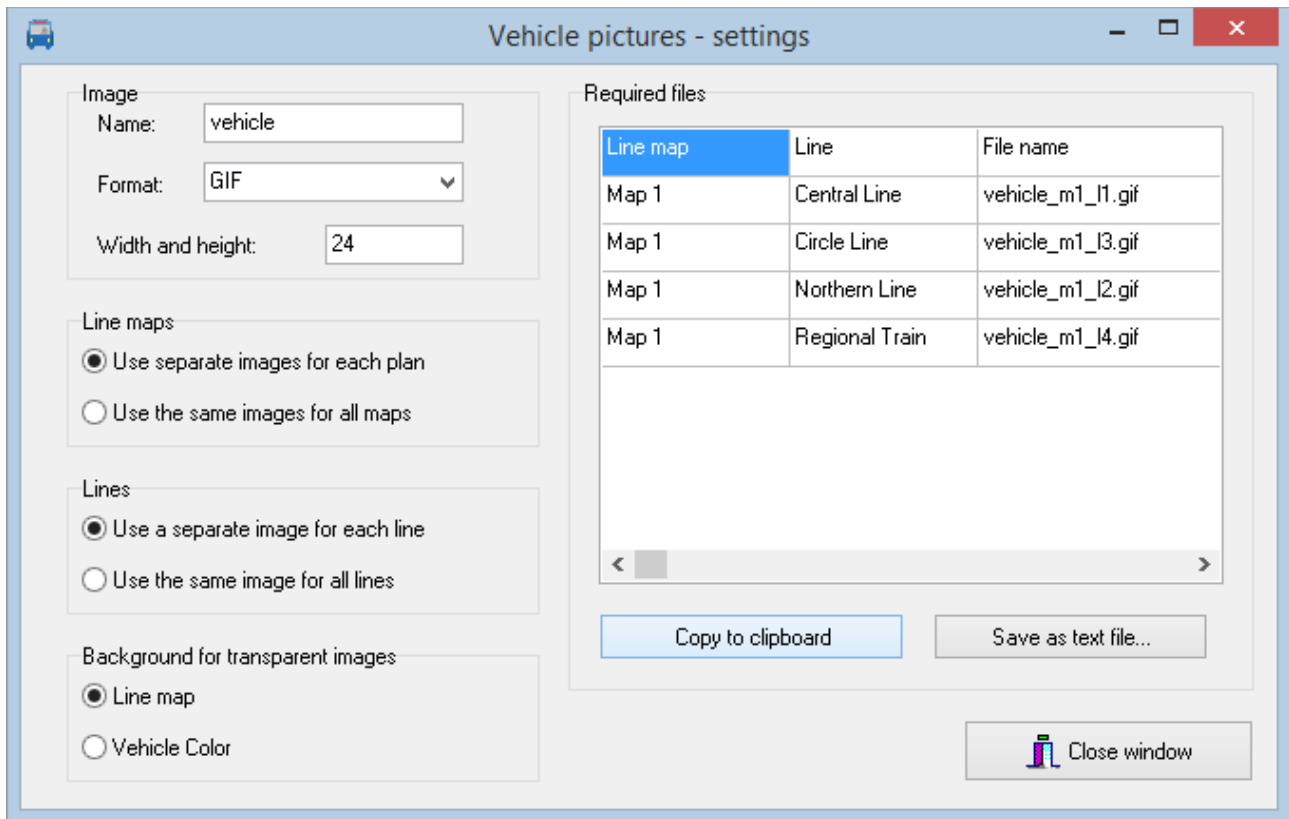
Publishing your website at the internet requires you to use a FTP program outside of PTraffic. Copy the complete folder including the sub-folder „images” to your web-server.

If you choose to select data individually you require at least:

- The project file (.ppr) from the project folder.
- All PTF files (.ptf)
- The complete folder „images” including all images contained therein
- All HTML, style-sheet and java-script files from the folder „PTrafficView” contained in the program installation directory PTraffic ProPlus. You might eventually use the search function of Windows ® to locate the installation directory.



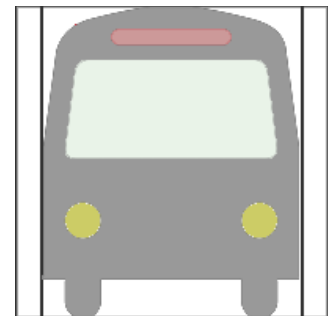
6.1.1. Settings for your own vehicle pictures



On the left side of the settings window, you can specify variables for the vehicle images. On the right side, you can see the required image files depending on current settings.

Image

- **Name:** Specify a name that is used as base name for the image file.
- **Format:** Specify the image file format to be used. Supported formats are GIF, JPG and PNG.
- **Width and height:** Here you specify the size of the images. Width and height are always identical since square format pictures are used. Use square GIF or PNG files with transparent backgrounds to create square images from non-square images by adding a transparent area accordingly (picture right).



Line maps

Here you can specify whether you want to use separate images for each plan or the same images for all plans.

Lines

Here you can specify whether you want to use a separate image for each line or the same image for all lines.

Background for transparent images

Here you can specify for transparency of the vehicle images to show the color of the line map or the default color for vehicles as defined in the program. Transparency is only supported for GIF and PNG image formats.

Copy to clipboard

Click here to copy the information about the required files in text format to the clipboard. You can

then view the text in word processing or a text editor.

Save as text file...

Click here to save the information about the required files in a text file.

If you don't remember which files you require later on, you will also find a text file with the required information in your chosen directory with a filename of „vehicleimages.txt“.

6.1.2. Structure of the Javascript file with the vehicle picture settings

The settings for the vehicle pictures are saved in the Javascript file "vehicleimages.js". You can also adjust them directly. All variables are explained here.

- **vehicleAsImage**
true: an image is used as vehicle symbol
false: a colored square is used as a vehicle symbol
- **vehicleImageName**
contains the name of the image. Depending on the other settings, the file names of the vehicle images are created from this name later on.
- **vehicleImageNameExtension**
contains the file extension (gif, jpg or png) for the image files
- **vehicleImageByMap**
true: A separate image is used for each line map in the project.
false: The same image is used for each line map.
- **VehicleImageByLine**
true: A separate image is used for each line.
false: The same image is used for each line.
- **VehicleImageTransparentBackground**
true: The line map will be shown on transparent parts of the image file (gif and png only)
false: The selected vehicle color as specified in PTraffic will be shown on transparent parts of the image file (gif and png only).
- **VehicleImageSize**
Size of the vehicle image in pixels. The images are in square format; thus the specified number of pixels apply to width and height.
- **VehicleSizeAuto**
true: If no image is used, the line width is used as the size for the vehicle symbol
false: Even if no image is used, the vehicleImageSize value specified in vehicleImageSize is used as the size for the vehicle icon. This allows you to resize the squares used by default for the simulation.

6.1.3. Structure of the file names for the vehicle images

- The name of the image files depends on the variables vehicleImageName, vehicleImageByMap and vehicleImageByLine and is composed as follows:
- The name specified under vehicleImageName
- If vehicleImageByMap contains „true“ the characters '_m' (m for map) and the Linemap-ID of the line map is added. The Linemap-ID can be found in file „linemap.ptf“ which can be opened using a text editor. The Linemap-ID's start in line 4 and continue up to the second last line at the beginning of each line.
Warning: File contents may not be changed!

- If vehicleImageByLine contains „true“ the characters '_l' (l for line) and the Line-ID of the line are added. The Line-ID can be found in file „lines.ptf“ which can be opened using a text editor. The Line-ID's start in line 4 and continue up to the second last line at the beginning of each line.
Warning: File contents may not be changed!
- A dot and the file extension as given in vehicleImageNameExtension.

If vehicleImageByMap and vehicleImageByLine are false, only one image file is needed for the vehicle icon.

If vehicleImageByMap is true, separate image files for the vehicle symbol must be created for all line maps.

If vehicleImageByLine is true, separate image files for the vehicle symbol must be created for all lines.

If vehicleImageByMap and vehicleImageByLine are true, separate image files for the vehicle symbol must be created for all line maps and all lines.

Examples for valid file names:

- vehicle.gif (single image file for all line maps and lines)
- vehicle_m2.gif (image for line maps with LineMap-ID 2)
- vehicle_l2.jpg (image for line with Line-ID 2)
- vehicle_m1_l3.gif (image for line map with LineMap-ID 1 and a line with Line-ID 3)

6.1.4. Program customization

The use of images for simulation purposes only works for websites created with the program. If you want to use images instead of symbols for the simulation you can also exchange the file "vehicleimages.js" in the user directory. As long as you do not reinstall PTraffic ProPlus, it should also work from within the program if the images are located in the subdirectory "images" in the project directory.

You should have set all variables first (see above:"Structure of the Javascript file") correctly. The user directory is most likely to be "C:\User\UserName\AppData\Local\PTraffic ProPlus". The HTML and Javascript files can be found there in the PTrafficView directory.

6.2. Shortest path in traffic simulation

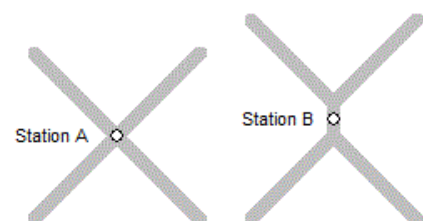
The traffic simulation in PTraffic ProPlus contains an algorithm that normally automatically calculates the correct route. However, if a station is located at an intersection between several line segments, the vehicle sometimes takes a detour. This is because the station is assigned to a certain line segment and the vehicle does not change direction while driving.

Sometimes you can fix the error by assigning the station to another line segment


If this is not possible, the station should be assigned to the line segment for the onward journey in the case of a branch with access from 2 directions and the onward journey in one direction.

Similarly, for a branch with access from one direction and continuation in 2 different directions, the station is assigned to the line segment with the access.

It becomes more complicated with intersections with accesses from 2 directions and exits in 2 directions (station A). Here, instead of one intersection, you use 2 branches with a small connecting piece and then place the station on the connecting piece (Station B).



6.3. Compatibility with browsers

 Since there are several browsers for different operating systems, of which in turn "countless" versions exist, it is unfortunately not possible to test the functionality for all existing browser versions. This is especially true for new browser versions that come out after the release of the current PTraffic version.

6.3.1. Google Chrome

In older Google Chrome versions the opening of some Pop-Ups doesn't work even if Pop-Ups are allowed in options. This doesn't happen if the applications are run via Internet Server (see 6.1 How to make projects available on the internet).

6.3.2. Internet Explorer

Internet explorer Version 8 may have problems on loading PTF files. Multiple reloads seem to solve these problems. To avoid this, you need to load all PTF files directly in the <head> section of the HTML file. On large projects this may be a large number of files causing some load delay.


An example for file "daygroups.ptf":

```
<script type="text/javascript" src="daygroups.ptf"></script>
```

As of Internet Explorer 9, which was released in 2011, the error no longer occurs.

7. Data

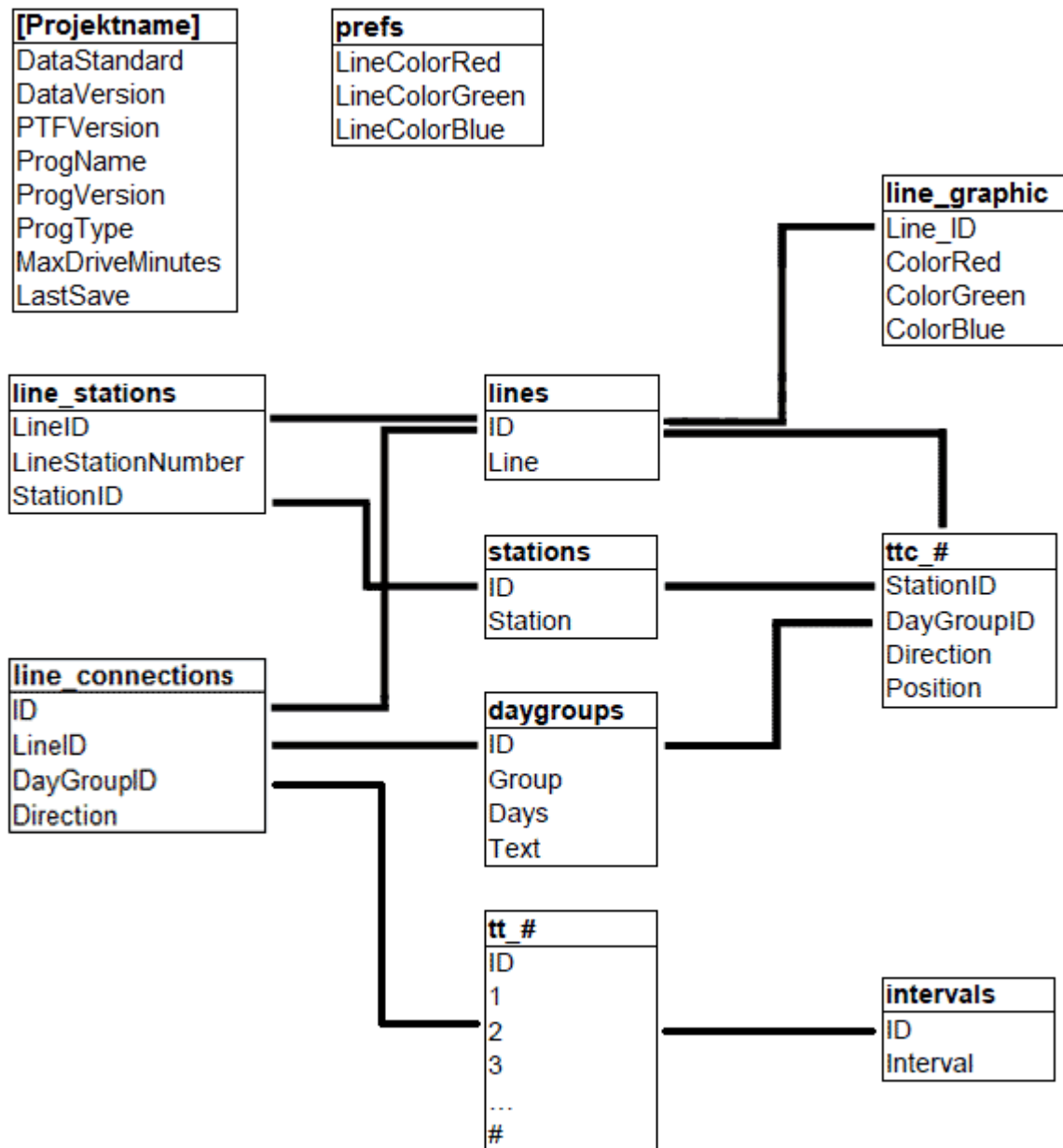
7.1. PTF files

 The data is stored in the open "Portable Table Format" (PTF). The open source software PublicSQL can access these PTF files and individual and platform-independent web applications can be created with them (see www.publicsql.org). The integrated web applications also use PublicSQL to access the data.

7.2. Data structure

The diagram below shows the most important connections of PTF tables of PTraffic.

The complete data model is shown in the additionally installed PDF files named „PTraffic Pro Data Model“.



The table “Tablename”.ppr is the project data file used by PTraffic only.

in table names indicates a variable value, where

- ttc_# is the lines ID
- tt_# is the line_connections ID

The ID in table “intervals” may be negative in table “tt_#. Positive values indicate minutes starting at 00, thus 124 indicate 02:04.

For further information on the structure of PTF files please see the homepage of PublicSQL www.en.publicsql.org.

7.3. Data in Excel and OpenOffice

Many transport companies create and maintain their timetables with Excel or the open source alternative OpenOffice. PTraffic does not offer an export option in the current version - however, it is easily possible to copy the timetables from the web applications into the spreadsheet:

- Select the appropriate web application in your project - e.g. "Timetables" or "Period Timetable".
- Start the application with the desired settings.
- Select the area on the right side that is of interest to you.
- Copy the area (CTRL-C).
- Paste the range from the clipboard into Excel or OpenOffice (CTRL-V).

Depending on the version of the spreadsheet, the background colors are also inserted.

In many cases, only a few corrections are now necessary (entry of line, days of travel and direction, etc.).

If the results are not satisfactory, using a different browser may be helpful. The way of pasting also has an influence on the appearance. The possibilities for this depend on the program used and the version number - among others can be chosen:

- Normal paste (CTRL-V)
- HTML
- Formatted Text (RTF)
- Text only / Unformatted text

8. Limitations

The current version of PTraffic is recommended to be used at home and for smaller transport companies to create personal timetables and for planning purposes.

Larger companies may find missing options in the current version. Future Versions of PTraffic will be expanded to provide for more features and functions.

9. Compatibility

The Software PTraffic, PTraffic Pro and PTraffic ProPlus and LineMap Draw are compatible. However, some restrictions apply when using the programs since PTraffic cannot be used to draw route maps and LineMap Draw doesn't allow to edit schedule data. Associated PTF tables will therefore not be updated.

The table shows the usage of project data files.

Tables for ...	LineMap Draw	PTraffic	PTraffic Pro / ProPlus
Stations and lines	✓	✓	✓
Schedules	-	✓	✓
Line maps	✓	-	✓

Working on both programs in parallel may cause inconsistency in the usage of shared tables (since edited data from one program aren't immediately reflected into the other software).

 LineMap Draw is not compatible with PTraffic Show because there is no timetable data in LineMap Draw.

10. More Information

This product uses the component "ATPrintPreview by Alexey Torgashin", freely available under the Mozilla Public License 1.1.

Author's page: <https://sourceforge.net/projects/atviewer/files/>

Page of the Mozilla Public License 1.1: <https://www.mozilla.org/en-US/MPL/1.1/>

For the setup routine the program "Inno Setup" is used. Copyright (C) 1997-2021 Jordan Russell. All rights reserved. Parts of copyright (C) 2000-2021 Martijn Laan. All rights reserved.

Website: <https://jrsoftware.org>.

For more information please visit our homepage at www.en.pttraffic.net.