

What does this program do?

It allows you to control the trains in TS Classic using the Raildriver controller from PI Engineering and/or a Joystick or build your own cab and control TS Classic from that. You can also send data to serial ports connected to Arduino's or similar development boards to control led's servos, lcd displays and stepper motors to control your own home made cab.

Why should I use this instead of Macroworks?

When I wrote versions 1 and 2 for the Raildriver Controller, Macroworks could not control trains that used the new Virtual controls so a lot of trains would not work, with my program, they did. This was remedied to some extent when the new Raildriver.dll was released in 2015. The disadvantage that Macroworks still has is that in order to be able to have finer control over the levers, you need to be able to program in Visual Basic.

With this program you can create as many different button configurations and set different notch values for the levers and re-assign the function of one lever to another as well as reverse the direction of the lever without writing a single line of code (See edit lever map). You can also assign the Cruise Control to one of the levers if you wish. The program can also sound the alarm for the DSD, AWS and Sifa while in any view.

The **Advanced** version can even display an overlay on top of the TS window that can display the current speed, current speed limit, next speed limit, distance to next speed limit, position of the levers, total distance travelled, trip distance which can be reset whenever you want and finally all the information needed regarding the boiler, brakes, fuel, water, firebox and injectors as well as a few more.

This program will detect what train you are driving and automatically load the necessary button and lever configurations for you.

As of version (2.0.4) you can also use a Joystick as well as or instead of the Raildriver.

Where does this information come from?

When you run the program for the first time or you select the "Railworks Data Extractor->Extract All" option from the menu the program does the following.

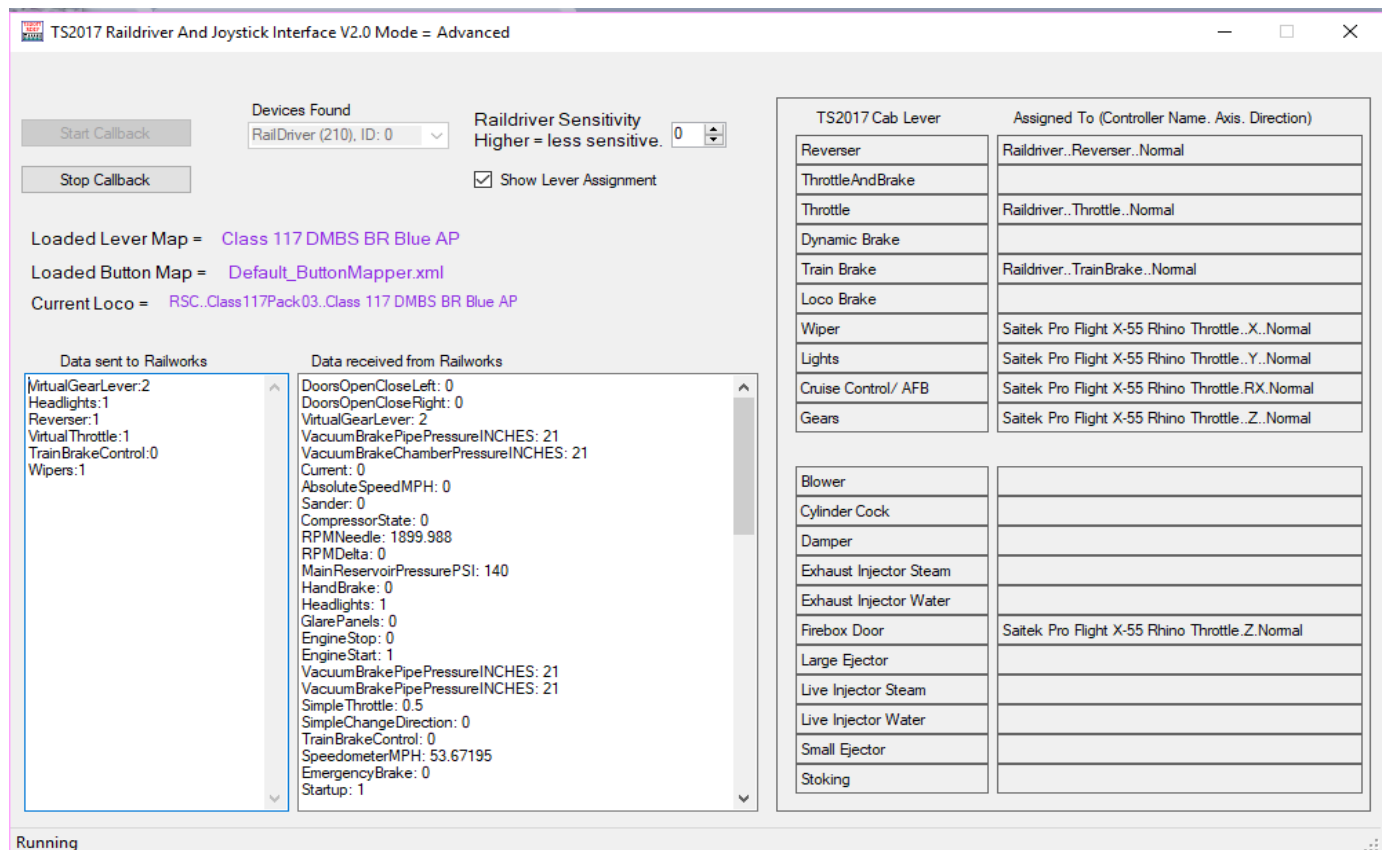
1. It searches your Railworks\Assets folder and obtains a list of every file with an AP extension.
2. It then uses 7zip to extract the bin, lua and out files from the list of AP files.
3. Next it gathers a list of all these bin files and uses serz.exe to extract them to a readable xml format.
4. Then it reads every xml file and if it is an engine.bin file or an inputmapper.bin file it extracts the data needed to create the lever map xml file and the inputmapper.txt file along with the name of the loco and the engine script it uses.
5. Finally it renames the existing engine script by adding a .rdbak extension to it and creates a new file with the same name as the original script and inserts text into this file that will call the getdata() function inside the Railworks_GetData_Script.lua file that will allow the data for the overlay used in the advanced version to be obtained from TS.

Step 5 is only required if you use the advanced version but I left it in for both versions otherwise if you decided to try the advanced version it would not work and you would have to run the data

extractor again, If you are sure you won't want to use the advanced version then you can run the Railworks Data Extractor->Undo All Files option to restore the files to their original state.

As you may have guessed, this extraction process has to deal with many thousands of files and that is why it can take up to 20 minutes per 100GB of assets. The good news is, provided you do not delete the KeyMaps\Levers folder you won't have to run it again. You will only need the "Extract Single Folder" option when you purchase new assets.

How to use the program in detail.



Main Screen

Devices Found:

Lists the names of the Raildriver and Joysticks found attached to your computer.

Start Callback:

Starts the communication between the Raildriver/Joystick and TS CLASSIC if running or it waits for it to run.

Stop Callback:

Stops the communication between the Raildriver/Joystick and TS CLASSIC.

Raildriver Sensitivity:

Adjusts the sensitivity of the Raildriver/Joystick, the higher the number the more any lever has to move before it registers as moving i.e. less sensitive the higher the number.

Show Lever Assignment:

Will show/hide the two columns on the right side of the window that shows the master assignment

of the Raildriver/Joystick levers.

Loaded Lever Map:

Displays the name of the loaded lever map which holds the values extracted from TS CLASSIC for the levers of the train you are driving. Clicking this will allow you to Load/Edit a lever map see KeyMaps->LeverMap on Page 5..

Loaded Button Map:

Display the name of the loaded Button Map which holds the data regarding the keyboard keys to send when you press any of the buttons on the Raildriver/Joystick. Clicking this will allow you to Load/Edit a Button map see KeyMaps->ButtonMap Page 4.

Current Loco:

Displays the Main folder, Sub folder and name of the train you are driving as in Kuju..Railsimulator..Class37 BR Blue. This is useful in locating the train file in either your assets folder or KeyMaps\Levers folder. If you have loaded a scenario and clicked the “Start Callback” button and the window has focus and you hover over the loco name then the full path to the files in your Railworks folder will be displayed.

Data sent to Railworks:

When you have clicked the Start Callback button and TS has the focus it displays the data that the Raildriver is sending to TS CLASSIC. It is useful in checking the program is working OK.

Data received from Railworks:

When you have clicked the Start Callback button and TS has the focus it displays the data that TS is sending to the program. It is useful in checking the program is working OK.

“TS2017 Cab Lever” and “Assigned To” columns:

So long as you have not clicked the “Start Callback” button, then clicking any row in either column will bring up a menu that will allow you to either “Assign Levers” or Add/Delete Dummy Levers. Clicking Assign Levers will bring up a new window allowing you to assign your Raildriver/Joystick levers to the cab levers. Clicking Add or Delete Dummy levers will add extra TS CLASSIC Cab Levers that you can use as temporary replacement levers in each loco key map, (See “Master Lever Assignment” later).

These ‘Master’ assignments will apply to all loco’s you drive unless you edit the individual lever map for a loco and change the assignment there. (See “Edit Lever Maps” later).

When TS is running and has the focus and you have pressed the “Start Callback” button it displays which Cab lever on the train you are driving is assigned to which lever on the Raildriver/Joystick.

Main Menu

Added in V3.3.0.1

File->Check For Updates:

The program will check the download website to see if there is an update available for the software. If there is, it will ask you if you wish to download it. It does not do an automatic install you still have to copy the downloaded files over yourself. **If you run this and get an SSL error, you need to update your Net framework to V4.8. You can do this by running the web installer located in the ‘Net 4.8\Web Install’ folder.**

File->Exit:

Exit the program.

Settings->Mode->Standard**Setting->Mode->Advanced:**

Switch between Standard and Advanced modes. This can take anything from a few seconds to a few minutes to complete depending on the amount of assets you have. The program will display a confirmation box when the change has completed. In Standard mode the program uses the Raildriver.dll and therefore does not require the engine scripts to be edited. In Advanced mode, they are required to be edited so switching between the two causes a lot of files to be written to disk.

Settings->Assign Levers:

Does the same as clicking on the TS CLASSIC Cab Lever and Assigned To columns described above.

Settings->Calibrate Raildriver: (Only visible if a Raildriver is attached)

Used to recalibrate the Raildriver(s).

Settings->Update Railworks Location:

Used to reset the location of your Railworks installation should you move it to another drive or folder.

Settings->Edit Control Names:

As new trains appear I have found that the names of the controls can change. In previous version I had to edit the program to make these new levers work. This version uses a text file which contains the names of these levers. Should a new train appear with yet another name change then this option will allow you to add the name to the list and it will work straight away without waiting for the program to be updated. You must be careful to keep the format the same or the program will fail.

The format is:- **ControlType=ControlGroup=ControlName=DisplayName=DisplayUnits.**

The DisplayName and DisplayUnits are only used in the Advanced version so can be left off if using the standard version. Examples are

Lever=Reverser=VirtualReverser

Gauge=BoilerPressure=BoilerPressureGaugePSI=Boiler Pressure=PSI

Alarm=Sifa=SiFaWarning=Sifa

Settings->Edit Folder Names:

To gather the data for the program to work it has to read the Engine.bin and InputMapper.bin files for each train you have. These files have different names for each train so the program has to read every bin file to see if it is an engine or inputmapper file or something else. To help speed up the initial data extraction the program uses a list of folders to search where I know the engine and inputmapper files are usually stored. The list is editable just in case a train appears where the files are stored in a folder other than those on the list.

Setting->Play Alerter:

Ticking this option will allow you to hear the AWS/DSD/Sifa/ATP from any view.

Setting->Speaker On: (Only visible if a Raildriver is attached)

Turn the speaker on the Raildriver on/off.

Settings->Run automatically when Windows starts:

When checked, will start the program when windows starts, and will automatically select "Start Polling" and then minimize the program where it will sit and wait for you to run TS CLASSIC.

Added in V3.3.0.1

Settings->Automatically Check For Updates:

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Settings->Overlay:

In "Advanced Mode" When checked will allow the overlay to be displayed. What is displayed will depend on the items selected in the sub menus. TS CLASSIC needs to be set to display in either Windowed or Borderless mode for the overlay to work.

In "Standard Mode" When checked will display the warnings for AWS, Sifa,DSD, Doors, Emergency Brake and Handbrake provided TS CLASSIC is running in Windowed or Borderless mode.

KeyMaps->Button Map->Edit Button Map:

This will allow you to assign the buttons on the Raildriver/Joystick to different keyboard keys. A Default_ButtonMapper is supplied for the Raildriver which sets the buttons the same as Macroworks does. The only difference is that I have hard coded the Bail Off function on the Loco Brake of the Raildriver to swap between KPH/MPH and back, this frees up buttons 15 and 16 on the lower left of the two rows of blue buttons to be used as something else.

(See editing button maps further on). There is now a macro called "Raildriver Toggle Speed" added to the button mapper so you can allocate a button to do the same thing and free up the bail off to be used as a button for something else.

KeyMaps-ButtonMap- Copy Button Map:

Use this option to copy any already created button map to a new button map. Handy if you need to change only one or two key assignments in an existing button map and keep all the other assignments.

KeyMaps-ButtonMap-New Button Map:

This will create a duplicate of the Default_ButtonMapper allowing you to make changes to it and save it under another name. This is useful if you need to assign a command that uses different keystrokes in different trains. You can then assign this to the train in question and the new button map will be loaded automatically when you drive the train.

(See editing button maps further on).

KeyMaps->Button Map->Load Button Map:

Allows you to load an existing button map for editing.

KeyMaps->ButtonMap->Assign to Loco's:

Will allow you to assign the currently loaded button map to any train.

KeyMaps->ButtonMap->Default Keyboard Delay:

Will allow you to insert a delay in milliseconds so that if you wish to send multiple key presses as in Ctrl + Shift + T then the Ctrl key down will be sent followed by the delay followed by the Shift key down and then the delay and finally the T key down. When you release the button then the reverse will happen.

KeyMaps->Lever Map->Edit Lever Map:

If a Lever Map has already been loaded, it will bring up a window allowing you to edit it. If not, then it will ask you to load one first.

(See editing lever maps further on).

KeyMaps->Lever Maps- >Load Lever Map:

Allows you to load a lever map ready for editing.

Railworks Data Extractor->Extract All Files:

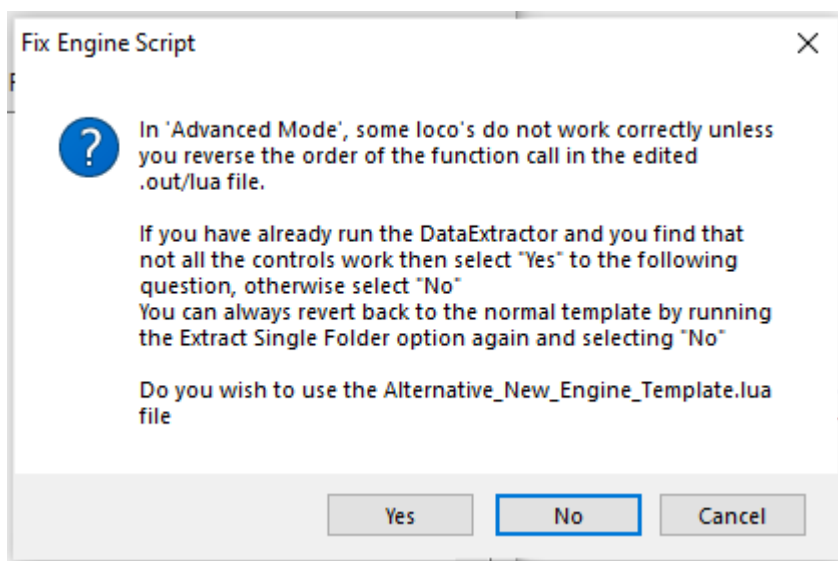
This will run the Data Extraction that occurred on the first run of the program. If you are using the Standard version then you will only need to run this if you have deleted your KeyMaps\Levers folder. If you are using the Advanced mode then it will ask you if you wish to copy the backup files (created when the Data Extraction was first run) to save having to extract the files again. If you select Yes then it will copy the backup files to your TS installation taking a couple of minutes to do so, it will tell you when it has finished. If you select No then you will be asked if you wish to overwrite your existing lever maps if they exist, you would usually select No to stop any lever maps that you may have edited being overwritten. Then it will run the data extractor again.

Railworks Data Extractor->Extract Single Folder:

If you purchase new assets then you will need to run this option to extract the data for the Lever Maps. Just browse to the folder containing your new assets such as “DTG\Academy” or “AP_Waggonz\Class90Pack” and click OK. This should take no more than a minute or two to complete. If you are not sure which folder contains the new train, simply try and drive it and the program will then tell you which folder it is in. **Do not go any deeper than the name of the folder with the same name as the loco or route or the extraction will not find all the files needed.**

You will be asked if you wish to overwrite your existing lever maps if they exist, you would normally answer No unless you are having a problem with a train not working correctly then answering Yes may fix it.

As of V3.1.7 when using Advanced Mode I have added the option to use an alternative engine script template. When extracting the data you will now see the following window.



Some loco's don't like my RailworksGetData_Script.lua being called before the original lua/out file. If you find some of the controls don't work in Advanced Mode then select "Yes" in the window above to switch the function calls. You can always run the Extract Single Folder option again and

select No to revert back to the original template.

Railworks Data Extractor->Undo All Files:

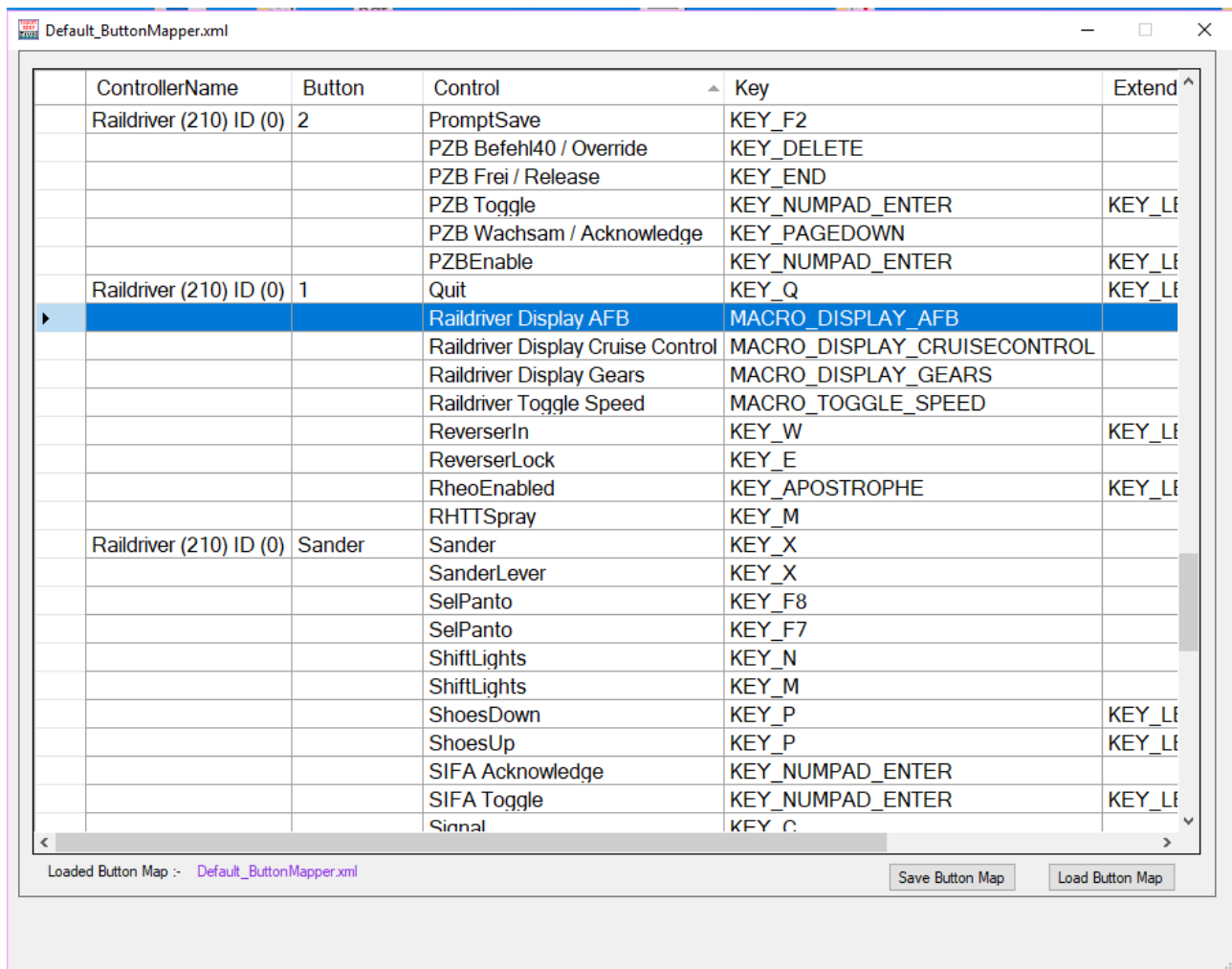
Railworks Data Extractor->Undo Single Folder:

This will restore all the edited script files back to their unedited state. You would not normally need to use this as using the data extractor automatically does this first but if you wish to install a sound pack from Armstrong Powerhouse then you will need to run this first.(See Installing Sound Packs).

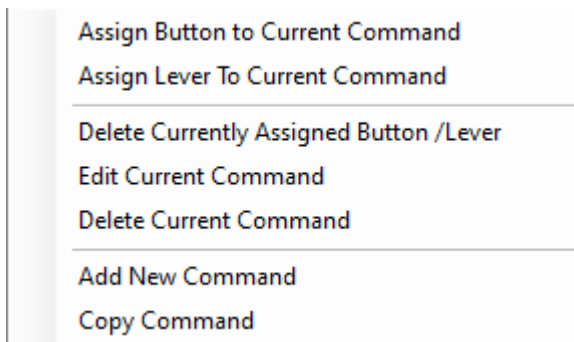
How Do I ?

Edit Button Maps:

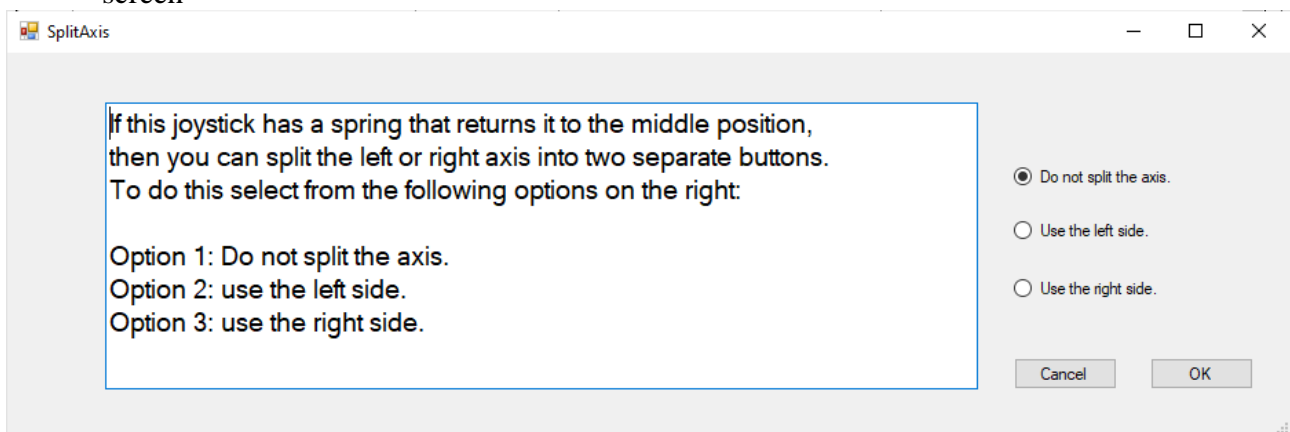
1. From the menu select KeyMaps->Button Map->Edit Button Map,
2. Select “Yes” to edit the currently loaded button map. “No” to load another map or “Cancel”.
3. You will be presented with the following screen.



4. Right click on the row you wish to edit and you will be presented with this popup menu.

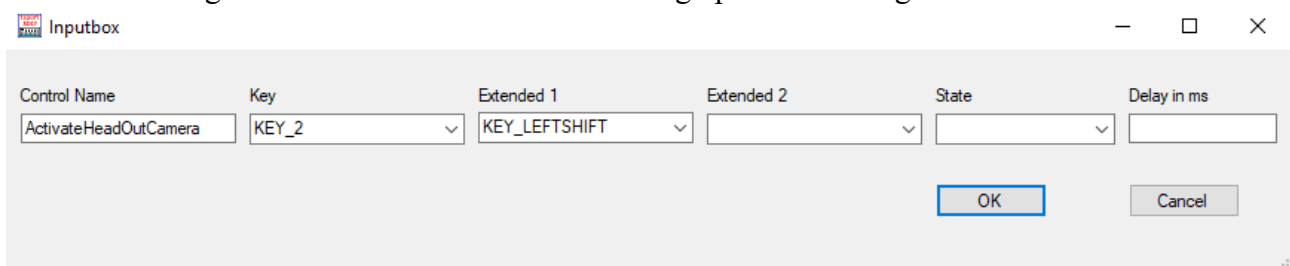


- 4a. Selecting “Assign Button to Current Command” or “Assign Lever To Current Command” will close the menu and change the text in the first column to either “Press a button on your controller” or “Move a Lever On Your Controller”. You now have 10 seconds to press the button or move the lever on your Raildriver/Joystick you wish to assign. If you are using a button then once pressed you will be asked to confirm your selection and you will be taken back to 3. If you have finished editing then go to option 5.
If you have selected the Assign lever option then you will be presented with the following screen



As of V3.2.6 you can now split a joystick axis into two which means moving the joystick fully left/right, up/down or forwards/backwards etc will act as if you are pressing two separate buttons. Just select from the 3 options presented, do not split, use the left/up/forward or use the right/down/backwards half of the axis. Selecting OK will take you back to 3. If you have finished then go to option 5.

- 4b. Selecting “Delete Currently Assigned Button/Lever” will delete the currently assigned button/lever.
4c. Selecting “Edit Current Command” will bring up the following screen.



Here you can change the name of the control, the keyboard key to send and whether to use the Shift/Control or Alt keys. You can also set the state at which the command is sent as either Pressed or Released and a delay that can emulate the key being held down for a set time in milliseconds. Under normal conditions you would leave these blank, if you select Released, then the keys will be sent when you release the button and also acts to reverse the direction of the lever. When done click OK and you will be returned to 3. If you have

- finished editing then go to option 5.
- 4d. Selecting “Delete Current Command” will remove the complete command line. You will be asked for confirmation first. You should not really need to use this as you can always edit the command.
 - 4e. Selecting “Add New Command” will present you with the screen at 4c. You can use this option to add a new command to the button map. You must at least fill in the Control Name or you won’t be able to save the new command. This is useful in a situation where there is no command in the list that will perform a particular key combination that you need. The Control Name that you use can be anything you like as it is only used for reference when you are assigning the Raildriver/joystick buttons. When finished click OK to return to 3.
 5. When you have finished with the button map you can either click the “Save Button Map” button or close the windows, either option will ask you if you wish to save the changes. If you select Yes you will then be asked for the filename and the changes will be saved, if you choose No then the changes will be discarded. You will then be returned to the main window.

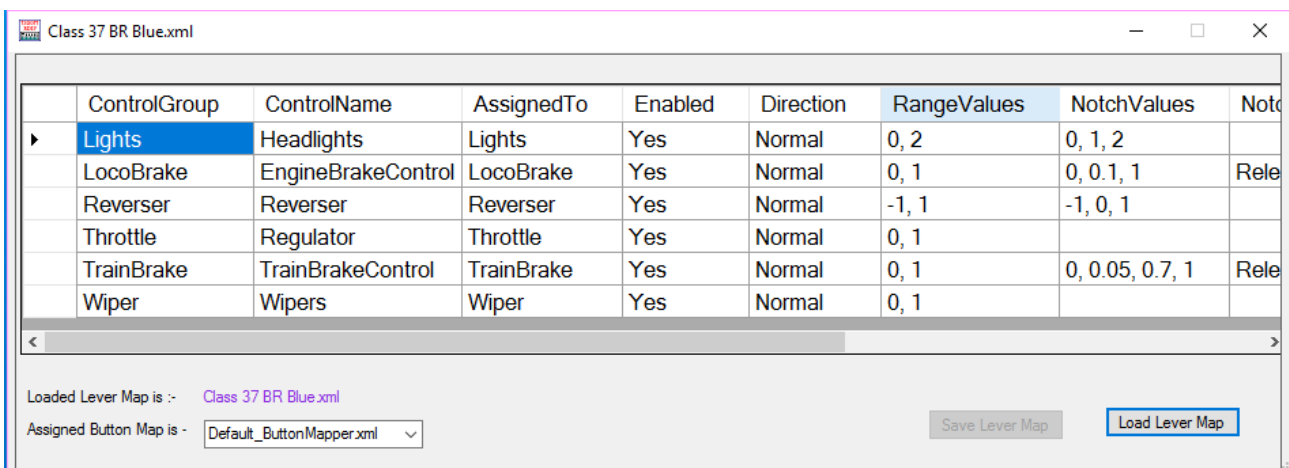
Edit Lever Maps:

As the data for the lever maps is extracted automatically when you run the data extractor for the first time or you use the Extract Single Folder option, you would not normally need to edit the lever maps. The program can only extract the information that is contained in the engine bin files and there have been a couple of occasions where this information is incomplete so you would need to update the lever map manually.

The main reason you would edit the lever map would be to re-assign the levers or to edit the NotchValues for the Lights. As the light switch on the Raildriver has only 3 positions and some trains have 5 positions for the lights you may find you need to change the NotchValues to 0, 2, 4 or even 0, 4, 3. The best way to find out would be to run the program, leave the light switch on the Raildriver in the off position and then using the keyboard set the lights to each position in turn and note from the right hand window on the main form what value the lights/headlights are set to when in the state you want. You may have to scroll down the right hand panel to see the data.

If you do not wish to edit the currently loaded lever map (look at the “Loaded Lever Map” label on the main screen) or no lever map is loaded yet then select Keymaps->Lever Map->Load Lever Map and select the lever map to load.

1. Select KeyMaps->Lever Map->Edit Lever Map and you will be presented with the following:



2. Right click on the row you wish to edit and you will be presented with a popup menu.
- 3a. Selecting “Add Control” or “Edit Control will display the following

ControlGroup	ControlName	AssignedTo	Enabled	Direction	RangeValues	NotchValues	NotchNames	Use Notches
Lights	Headlights	Lights	Yes	Normal	0, 2	0, 1, 2		Yes

Cancel OK

I have only come across the need to use Add in one loco, the Kuju\Intercity Class 43 which required the VirtualBrake to be added under TrainBrake. It may also be necessary in order to add missing wipers.

The columns are:

ControlGroup = The name of the lever/valve in TS CLASSIC. i.e. ThrottleAndBrake. You would normally only need to change this if you are using the “Add Control” option.

ControlName = The actual name of the lever used in the train you are editing i.e. VirtualThrottle. You would normally only need to change this if you are using the “Add Control” option.

AssignedTo = The name of the cab lever that the control is assigned to in the ‘Master’ lever assignment i.e. LocoBrake. Normally the ControlGroup and the AssignedTo would be the same but you can change this to any of the levers you wish so you could assign the Cruise Control for the loco you are editing to the Raildriver/Joystick lever assigned to say the LocoBrake by selecting LocoBrake in the AssignedTo dropdown box. The Raildriver/Joystick lever that is assigned to the LocoBrake in the master lever assignment will now control the Cruise Control for this loco only, but will still be assigned to the LocoBrake for all other loco’s. If any levers you reassign have already been assigned then you will be asked if you wish to delete the other assignment, simply select Yes. If you wish to make the change apply to all loco’s then make the changes in the Master lever assignment instead. See (Master Lever Assignment).

As of V2.1.6 you can now edit the “ControlNames.txt” file and add new levers from TS that are not listed or add fake cab levers such as “CenterOffBrakeLever” which can then be assigned to the class 66 which uses brake levers that are sprung loaded to the centre position.

These will then show up in in the Master Lever Assignment and you can then assign a joystick axis to these which can then be selected in the “AssignedTo” column above. These levers don’t have to have self-centring. You can now assign the Drivers/Guards wipers to different levers and the same with the Headlights and Tail lights, that way they can be controlled independently of each other. . You would simply add Lever=GaurdsWiper or Lever=TailLights to the ControlNames.txt file.

Enabled = Is the control used Yes/No. Not all controls in a train are designed to be controlled by the user. If a train has a VirtualBrake and a TrainBrake then it is usually the VirtualBrake that controls the train so the TrainBrake would be set to No. You would normally only need to change this if you are using the “Add Control” option or the data extracted from the engine bin file is wrong (it can happen).

Direction = The direction the lever moves Normal/Reversed.

RangeValues = The minimum/maximum values to be sent to TS for the control. This must be two numbers only and separated with a comma and a space as in 0, 1

You would normally only need to change this if you are using the “Add Control” option.

NotchValues = Assigns notch values to the lever to allow the lever to move to set positions when moved. If you edit this then make sure the numbers have a comma and space between each one or the program will fail to read them correctly. You would normally only need to change this if you are using the “Add Control” option.

Both the Min/Max and NotchValues can be found in the FullEngineData folder. Just browse to the folder containing the train. An example of a TrainBrake on a class 25 is.

```
CONTROL NAME "(TrainBrakeControl)", MIN VALUE "(0)", MAX VALUE "(1)",  
DEFAULT VALUE "(0.4)"  
Notch Name "(Release)",           Notch Value "(0)"  
Notch Name "(GraduatedSelfLap)",   Notch Value "(0.2)"  
Notch Name "(FullService)",         Notch Value "(0.7)"  
Notch Name "(Emergency)",          Notch Value "(1)"  
Use Notches,                        "(No)"
```

You can see that the Use Notches is set to No. If it was set to Yes then the lever would jump from 0 to 0.2 to 0.7 then 1 which would take the brakes from off to full on with nothing in between GraduatedSelfLap and FullService. With the Use Notches set to No then there will be linear movement between 0 and 1.

An example of the Reverser on the same class 25 is

```
CONTROL NAME "(Reverser)", MIN VALUE "(-1)", MAX VALUE      "(1)",  
DEFAULT VALUE "(0)"  
Notch Name "(Forward)",           Notch Value "(1)"  
Notch Name "(Neutral)",           Notch Value "(0)"  
Notch Name "(Reverse)",           Notch Value "(-1)"  
Use Notches,                       "(Yes)"
```

With the Use Notches set to Yes, the reverser will jump from Forward to Neutral to Reverse with nothing in between which for a diesel is what you want. For a steam train there would either be no NotchValues or the Use Notches would be set to No.

I have also added the option to add the letter ‘n’ just before a NotchValue which will set the midpoint of the lever to be at that notch. I have used this on the Class 166 at notch value 0.35 by setting it to n0.35 without this the 166 starts to accelerate when the ThrottleAndBrake lever on the Raildriver is in the mid position but by adding the n the train does not move until you pass the centre indent.

Another option I have added is to add the letter ‘c’ before a NotchValue. This tells the program to keep sending this value while the lever is in that position. This I have used on the VirtualRailroads vR_BR111_SBFV1 which requires the throttle to be held in the full throttle position for the Tap changer to count up. By changing the NotchValue 1 to c1 enables this.

NotchNames= This is only used in the Advanced mode for the overlay. What you can do is enter text to be displayed when the lever is at each notch position. Again make sure you separate each text with a comma and space.

Use Notches= When set to Yes it tells the program to use the notches if any, if set to No then the program will ignore the notches and instead give a linear movement between the two values set in RangeValues to the lever.

As an example of adding a control for a missing wiper with the control name of WiperSpeed, you

would use the Add control menu option and complete the settings like this.

ControlGroup	ControlName	AssignedTo	Enabled	Direction	RangeValues	NotchValues	NotchNames	Use Notches
Wiper	WiperSpeed	Wiper	Yes	Normal	0. 1	0. 0.2. 1		Yes

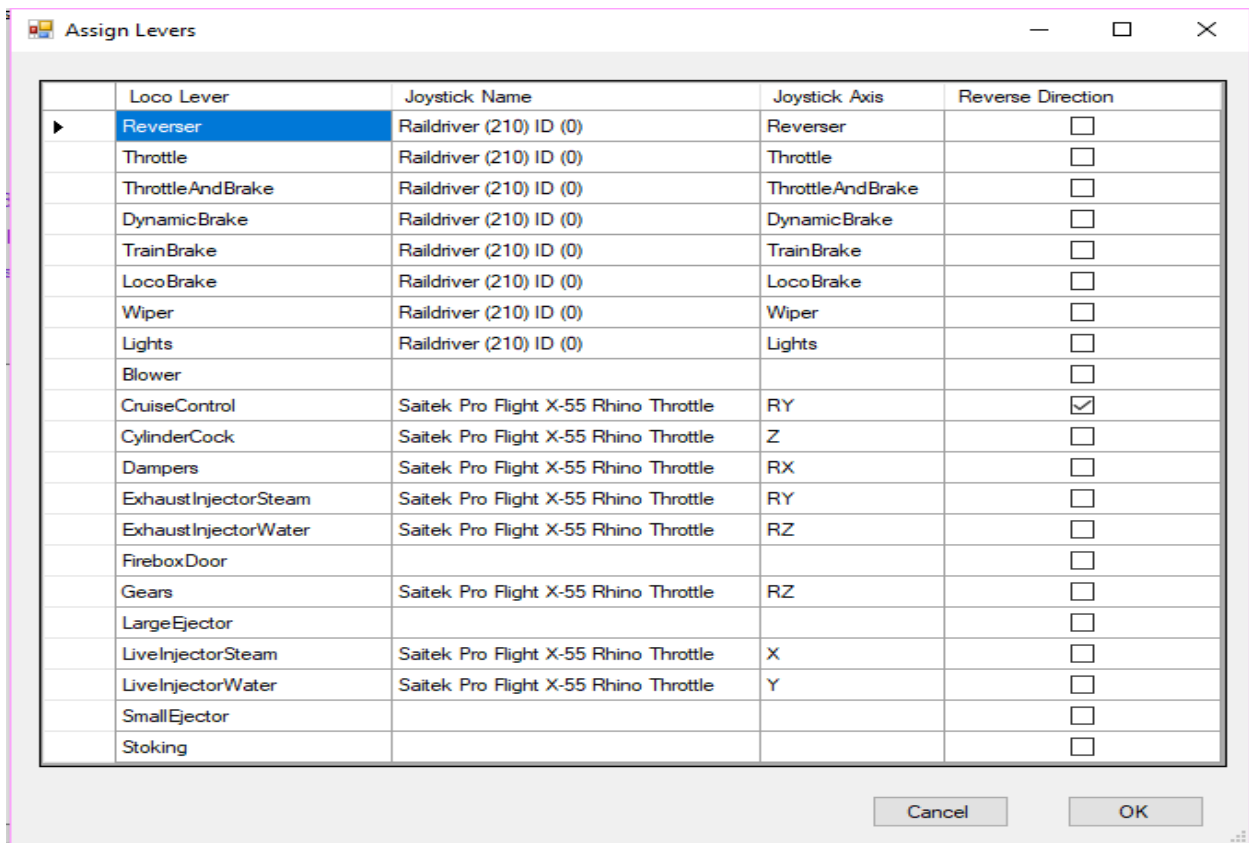
Cancel OK

When you have finished editing the lever map click OK to be returned to the screen at 1.

- 3b. The third menu option is “Delete Control” and it will delete the selected row. I can only see this being used if you have used the “Add Control” option and you have changed your mind and need to delete it.
4. At the bottom of the window in step 1 you also have the option to select a Button Map to assign to the loco belonging to this lever map. When the Data Extractor is first run all the trains are assigned the Deafault_ButtonMapper.xml but if you have created a new button map then you can select it from the drop down box and it will automatically be loaded when you drive this train.
5. When you have finished editing the lever map click the “Save Lever Map” button or close the window where you will then be asked if you wish to save the changes. If you select Yes the changes will be saved. You will then be asked “Do you want to copy the changes to other files?” As there are usually many variants of the same loco but with slightly different names, you would normally answer “Yes”. If you do answer yes you will be taken to the folder containing the lever map you just edited. Most of the time you will select every file in the folder by selecting one of them and pressing Ctrl and A together which will highlight all of the files, and then click open, all of those files will then contain the changes you have made. Just be careful with you selection as some folders contain the lever maps for more than one loco type as in the Kuju\Railsimulator folder or the DTG\RhineValley1. In that situation your best bet is to hold down the Ctrl key and click on each file you wish to be edited. The program will continue to ask you if you wish to save the changes to other files until you answer No.

Master Lever Assignment:

When you run the program for the first time you need to assign the cab controls to your Raildriver/Joystick axis that you wish to use them with. To do this either click on “Settings\Assign Levers” menu option or if the “Show Lever Assignment” is checked, click anywhere on the panel that pops out on the right of the window and select “Assign Levers”. This will display the following screen



The columns are:-

Loco Lever;- Refers to the Cab lever in the loco or shows any Dummy levers you have created.

Joystick Name & Joystick Axis :- Refer to the name of the Raildriver/Joystick and the axis(x,y,z etc.) or the Raildriver lever the Loco Lever is assigned to.

Reverse Direction;- If ticked then the direction of your Raildriver/Joystick axis is reversed.

To assign the levers simply “right click” on the row of the lever you wish to assign and a popup menu will appear. If the row has not been assigned yet then the only option will be “Assign Controller Axis”. If it has already been assigned then you will also have the option of “Delete Controller Axis”. Selecting “Assign Controller Axis” will change the text in the second column to “Move the Joystick axis you wish to assign within 10 seconds”, simply move the Raildriver/Joystick lever you wish to assign and you will then be shown which axis the program thinks you selected. If it is correct, select “Yes”, if not select “No” and try again. When you have finished click the “OK” button and you will be asked to confirm that you wish to save the changes. You may have noticed in the screenshot above that I have the Gears and the ExhaustInjectorWater assigned to the same joystick and axis, as most steam locos don’t have gears this can cut down on the number of axis you need. I have done the same with the CruiseControl and the ExhaustInjectorSteam. You can create Dummy cab levers to allow you to assign a different joystick axis to a loco lever rather than keep changing the Master lever assignment, ideal for assigning a self-centring joystick/gamepad lever to a self-centring cab lever such as the TrainBrake/LocoBrake on a class 66 diesel locomotive. All other locos will still use the lever assigned to the TrainBrake/LocoBrake.

Combined Throttle and Train Brake for joystick user.

As of V3.0.2 You now have the option to use a single joystick axis as both the throttle and brake i.e. the first half will be the train brake and the second half will be the throttle. To enable this function you simply assign the same lever to the Throttle, ThrottleAndBrake and the TrainBrake, when asked

if you wish to delete the other assignment select No. Also in this mode if you change the direction of the throttle or train brake the other will be reversed automatically.

Advanced Mode

The advantage of Advanced mode (selected by Settings\Mode\Advanced) is that you can turn off the HUD using the F4 key to give you full view of the instruments and have all the data displayed in text format on the screen like this.



The amount of data displayed can be selected either by using the options in Settings\Overlay or using the keyboard shortcuts shown below. You can also change the font size, colour and position. Although you no longer have the distance to next station/stopping point shown, I have added a Total Distance and Trip Distance that work the same way as in a car, you can use the F1 key to display your Task List and get the distance to your next stop from that, you then reset the Trip Distance by pressing Shift + Alt + R together. The overlay also displays your speed and the current speed limit as Speed: 30.0 -> / 40 Mph which means you are doing 30 in a 40 limit. You also have your next speed limit and distance to it shown as Next Speed Limit 50 Mph @ 0.18 Mi which means the next speed limit is 50 Mph in 0.18 Miles. The -> indicates the Direction Toggle is set to Forwards and <- indicates it is set to reverse. This is used in scenarios where you have to drive the train back to where you started. The display should display either Mph/Kph depending on the route you are driving but you can change this by using the Bail Off function on the Raildriver. I have done it this way to free up the two "Speed MPH" and "Speed KPH" buttons which you can then assign to something else.

Please remember in order for the overlay to work you must be running TS CLASSIC in either windowed or borderless mode using the options Settings\Graphics\Full Screen in TS CLASSIC and set the focus back to TS CLASSIC by either Alt + Tab back to it or click on its window..

Advanced Mode Overlay Shortcuts.

Overlay on/off	Shift + Alt + V
Speed on/off	Shift + Alt + F1
Main Boiler on/off	Shift + Alt + F2
Distance on/off	Shift + Alt + F3
Next Speed Limit on/off	Shift + Alt + F4
Acceleration on/off	Shift + Alt + F5
Controls on/off	Shift + Alt + F6
Indicators on/off	Shift + Alt + F5
Brakes on/off	Shift + Alt + F8
Gradient on/off	Shift + Alt + F9
Not Used	Shift + Alt + F10
Warnings on/off	Shift + Alt + F11
Clock on/off	Shift + Alt + F12
Driver – Primary on/off	Shift + Ctrl + F1
Driver – Secondary on/off	Shift + Ctrl + F2
Steam on/off	Shift + Ctrl + F3
Not Used	Shift + Ctrl + F4
Fire on/off	Shift + Ctrl + F5
Fire Indicators on/off	Shift + Ctrl + F6
Fire Controls on/off	Shift + Ctrl + F7
Not Used	Shift + Ctrl + F8
Water on/off	Shift + Ctrl + F9
Water Indicators on/off	Shift + Ctrl + F10
Water Controls on/off	Shift + Ctrl + F11
Safety on/off	Shift + Ctrl + F12
Reset Trip Meter	Shift + Alt + R
Direction Toggle	Shift + Alt + D
Font Outline on/off	Shift + Alt + O
Font Colour Cycle	Shift + Alt + C
Font Size Cycle	Shift + Alt + S
Text Up	Shift + Ctrl + Up
Text Down	Shift + Ctrl + Down
Text Left	Shift + Ctrl + Left
Text Right	Shift + Ctrl + Right

Changes made between TS2017 Raildriver interface and TS2017 Raildriver & Joystick Interface

- 1 The obvious one is you can now use a joystick as well as or instead of the Raildriver.
2. You can now assign any lever to any loco lever globally instead of having to stick with what the Raildriver levers were designed to operate or having to edit each lever map individually.
3. If you have a Raildriver then when you change the AFB, Cruise Control or Gears, the changes will be displayed on the Raildriver display for 2 seconds. If you have more than one Raildriver then these changes will be displayed on the second Raildriver. I have also created the following macros to display the current values again for 2 seconds when you assign the macros to buttons. They are “Raildriver Display AFB”, “Raildriver Display Cruise Control” (both do the same so you don’t have to assign both) and “Raildriver Display Gears”.
4. You can create Dummy cab levers to allow you to assign a different joystick axis to a loco lever rather than keep changing the Master lever assignment, ideal for assigning a self-centring

joystick/gamepad lever to a self-centring cab lever such as the TrainBrake/LocoBrake on a class 66 diesel locomotive. All other locos will still use the lever assigned to the TrainBrake/LocoBrake.

Updates since V2.0.4

18/08/2017 V2.0.5 released.

Fixes crash when creating new button map.

19/08/2017 V2.0.6 released.

Fixes crash when assigning buttons in New button map.

18/10/2017 V2.0.7 released.

Added HandBrake to list of levers that can be used with a joystick and fixed error with sliders not being detected properly.

20/10/2017 V2.0.8 released.

Optimized the code for the overlay to improve frame rates in game. Fixed error when extracting data not enabling handbrake. Added “Handbrake On” warning to the overlay.

19/11/2017 V2.0.9 not released.

1. Western Hydraulics Class 42_Expert Inputmapper updated to enable wipers.
2. Western Hydraulics Class 42, fixed DSD sounding all the time.
3. Main program will now run without any controllers connected to allow the overlay to be used when only using the mouse & keyboard.
4. Main Program, separated the Lights and Wipers so that you can assign different controls to each wiper and the Headlights/Tail lights using Dummy levers.
5. Updated the procedure on installing sound packs on page 16 of this manual.

20/11/2017 V2.1.0 released

Corrected error with a lever being assigned to the Dampers not working.

27/12/2017 V2.1.1 released.

1. Fixed the error in Overlay showing a white screen when running TS in Full Screen mode due to recent win10 update.
2. Added option to click on both the loaded ButtonMap and loaded LeverMap fields on the main window so that you can edit them without going through the menu.
3. Fixed error with external alerter not working when the Overlay was turned off.
4. Updated the part of the program that detects if the program is already running, if it is it will now bring the program into view.

16/01/2018 V2.1.2 not released.

1. Fixed DSD device sounding when DSD enabled on some loco's.
2. Added an option to the KeyMaps\ButtonMap menu that enables you to create a copy of an existing button map thereby keeping all the currently assigned buttons, useful if you need to make a copy with just a few changes.
3. Added script fixes for the AP Class 43 Enhancement Pack that will reset the DVD timer when the throttle or brake are moved.
4. Fixed external alerter sounding all the time when you exit a scenario with the alarm sounding. Simply click the Stop Callback button and the alarm will now stop.

27/01/18 V2.1.3 released

1. Added AWS fix for Virgin Train Pack.

2. Updated page 1 with regards to the ideal location to extract the program too.
3. Major improvements to code, program now only uses 0.5% - 1.5% of CPU cycles instead of 12% - 14%, this also means that frame rate drop is now only 1-2 frames.

12/02/18 V2.1.4 released

1. Further minor code optimization.
2. Updated ControlNames.txt file to add lights for the Class 370 APT-P and Throttle and Brakes for the VR ET 403.
3. Added second alarm sound so that users without the overlay can distinguish between AWS/Sifa (continuous tone) and DSD/DVD/Alerter (pulsed tone).

27/02/2018 V2.1.5 released.

1. Final code optimization done.
2. Fixed error where Raildriver calibration file for second Raildriver was not saved correctly.
3. Minor change made to Railworks_Getdata_Script used in advanced mode.
4. Finally found & fixed error some were having with long delays with their old Raildrivers.

03/04/2018 V2.1.6 released.

1. Moved the names for the speedometer to the ControlNames.txt file so they can be updated by the user the same as the other controls.
2. You can now edit the "ControlNames.txt" file and add new levers from TS that are not listed or you can add fake cab levers such as "CenterOffBrakeLever" which can then be assigned to the class 66 which uses brake levers that are sprung loaded to the centre position.

These will then show up in in the Master Lever Assignment and you can then assign a joystick axis to these which can then be selected in the "AssignedTo" column of the relevant Lever Map. These levers don't have to have self-centring. You can now assign the Drivers/Guards wipers to different levers and the same with the Headlights and Tail lights, that way they can be controlled independently of each other. You would simply add Lever=GaurdsWiper or Lever=TailLights to the "ControlNames.txt" file.

If you do add other levers then you will have to run the "Data Extractor\Extract Single Folder" and select the loco that the levers will be assigned to and select "Yes" to overwrite existing lever maps. Then the new levers will be added to the lever map.

Finally edit the lever map for the loco and assign the new lever to the relevant control.

30/04/18 V2.1.7 released

Removed the menu option to turn the raildriver speaker on/off as having it set to off causes distortion for some, the speaker is now turned on by default whenever the program is run but will only affect those who have the power supply to the raildriver plugged in.

01/05/18 V2.1.8 released

You can now use the bail off on the train brake as a button and assign it to any command in the button map, if you don't re-assign it then it will continue to change MPH to KPH and back again.

24/06/18 V2.2.0 released

1. This is an amalgamation of V2.1.9 which adds an option in the Settings\Overlay menu to allow those who have more than one monitor to select which monitor to display the overlay on.
2. When a user assigns a button in the button map, a check is now made to see if the button is already assigned, if it is then you will be asked if you wish to delete the original assignment.
3. Fixed error in the Data Extractor not updating the lever maps correctly when adding the data from the Updates\lever Fixes folder

14/07/18 V2.2.1 released

1. When re running the data extractor, the full engine data is now updated.

03/11/2018 V3.0.0 released

1. Program converted to both x86 & x64 versions for use with updated TS2019.
2. Program updated to use Net 4.0 (the same as TS2019) so users do not have to enable net 3.5 in win10 anymore.
3. Program converted to use SharpDX instead of Managed DirectX which is x86 only.

05/11/18 V3.0.1 released.

1. Fixed error of long delays from the Raildriver.

06/11/18 V3.0.2 released.

1. Added the option to use a single joystick axis as both the Throttle and Train Brake, see pages 14 for instructions.

17/11/2018 V3.0.3 Released.

1. Fixed error where neither Standard or Advanced mode could be selected in the Settings\Mode menu.
2. Option to use a single joystick axis as the throttle and train brake added to the Advanced mode.
3. Fixed error of flickering screen reported by some.
4. Found the cause of the black screen showing over TS2019, see new "When Things Go Wrong.pdf".
5. Things to look for when things go wrong now moved to a separate pdf file
6. Fixed a memory leak that crept in after converting to SharpDX for the overlay.

31/01/19 V3.0.4 Released

1. Fixed error with the program not minimizing to the System Tray when started when Windows first loads.
2. Added support for nonlinear notch values such as 1, 0, 2, 3
3. Fixed minor error in Data Extractor
4. Included fix for Czech TU47 as supplied by Crrispy (Gandalf on Railsim-fr.com).

28/02/19 V3.0.5 Released.

1. Updated the data extraction to now add levers that don't have animation names to improve detection of the controls on some third party loco's. You will need to edited the lever map to enable them though.

28/03/19 V3.0.6 Released.

1. Fixed an error with the Data Extractor that crept in in V3.0.5.

10/04/19 V3.0.7 Released

1. Fixed an error that stopped you being able to set the neutral position by adding the letter 'n' in front of the relevant notch value.
2. Added some extra names to the FolderNames.txt file which should enable more German trains to work. (Thanks to Steve Green for the list).
3. Added script fixes for the Alaskan Railroad to enable it to function correctly in advanced mode.
4. Added lever and script fixes for the Vulcan Productions Preserved Deltic.

16/05/19 V3.0.8 Released.

I have added the option to send the majority of the data in TS2019 to any attached serial ports to enable you to display this data using an Arduino or similar micro controller that has a serial port

option. You can then display any of the gauges using lcd's or seven segment displays and control led's for thing like AWS, Sifa, Doors etc. See the attached "Output Data To Serial Ports" documents.

I have also added the option in the Button Map of sending a command for a specific length of time when the button is pressed and sending another command for a specific length of time when the button is released. This will also allow you to use on/off switches, see the "Advanced Button Mapping" documents.

13/07/19 V3.0.9 Released

1. I have removed the warnings that pop up if there is an error found in any files while the data extraction is working as this halted the program until the error was acknowledged.
2. Added a replacement script for the Feather River EMD F7.

18/09/2019 V3.1.0 Released

A small update to allow the speed limits obtained in Advanced mode to be sent to the serial ports

23/09/2019 V3.1.1 Released

Another small update that fixed a minor bug in the previous version and you can now display the time on a lcd/led display. I have also changed the ControlGroup for the speed limits from Speed to SpeedLimits to make it easier to distinguish them from the standard speed data.

06/11/2019 V3.1.2 Released

If you are using Advanced mode and put the reverser into reverse, then the data for the NextSpeedLimitBackSpeed and NextSpeedLimitBackDistance will be sent to the serial port instead of NextSpeedLimitSpeed and NextSpeedLimitDistance but with a negative number to show that it is the speed limit behind being displayed. If you switch to the rear cab then the speed limits should swap so that what was the speed limit behind, now becomes the speed limit in front. Unfortunately this does not work for all loco's so I have included a macro called "MACRO_TOGGLE_SPEEDLIMIT" which will switch forward/back speed limits on each call. To use it simply edit your button map, select the "Add New Command " from the right click menu option, give the Control Name box a name (I used "Switch Speed Limits") and select the "MACRO_TOGGLE_SPEEDLIMIT" from the Key box, it is the last item in the list. This does the same as pressing Shift+Alt+D when the overlay is displayed. This update also works on the overlay so when you select reverse, the overlay shows the speed limit behind.

07/11/19 V3.1.3 Released

Fixed a long standing error when saving lever map data to many files that occurred when the ControlName was changed. This was caused by the program searching on the changed version of the ControlName instead of the original ControlName resulting in the entry not being found.

08/11/19 V3.1.4 Released

Fixed issue with the KEY_SLASH (forward slash) not working correctly and added updates to the lever maps for the AP Class 50, AP Class 350 and RSSLO BR612 supplied by Crrispy on UKTrainsim. These can be found in the updates folder.

15/11/19 V3.1.5 Released

1. Fixed issue with the speed in the overlay showing a negative value when you switch to the rear cab
2. Altered the speed display in the overlay to show --> instead of -> (2 dashes instead of 1) when the user either pressed Shift+Alt+D or uses the MACRO_TOGGLE_SPEED macro when changing cabs.

20/11/19 V3.1.6 Released

Fixed a bug that crept in in V3.1.3 which caused an error to be reported when reassigning a lever.

12/01/20 V3.1.7 Released

1. Added updated scripts for the VNHRR.
2. Added audible/visual warning for the ATP alarm.
3. Added the option to select an alternative engine script template when using the Extract Single Folder option in Advanced Mode (see page 8). With some loco's, only one or two of the controls work, to fix this you need to alter the order of the function calls in the engine script. This is what the alternative engine script does.

26/01/20 V3.1.8 Released

1. Stopped the text displayed in the 'Data received from Railworks' window from always scrolling to the top as the data changes. The data displayed will remain where you scroll to.

28/01/20 V3.1.9 Released

The program now outputs the name of the ButtonMap without the .xml extension and the LocoName, whenever the loco changes. To enable this I have added the code

```
char ButtonMap[80];
```

```
char LocoName[80];
```

in the main declaration section and then in the 'if(!strcmp(data[0],"locochanged"))' section of the UpdateHardware() function I added

```
strcpy(ButtonMap, data[1]);
```

```
strcpy(LocoName, data[2]);
```

When the program detects a new loco it sends "<locochanged:ButtonMap:LocoName> "so
Data[0] = "locochanged", data[1] = name of the current ButtonMap, data[2] = name of current loco.

04/03/20 V3.2.0 Released

(Advanced Mode Only)

1. Added another warning to the overlay that will display a message advising you that you are approaching a reduced speed limit if your current speed is 2 mph or 3.2 kph above the reduced limit and you are within 1km or 0.6 miles of the limit. An audible warning will sound too but will only sound for 2 seconds. The message will stay displayed until you reduce your speed to less than 2 mph or 3.2 kph above the new speed limit. This warning can be turned on or off in 'Settings\Overlay\Main\Warnings\Approaching Speed Limit'. This has been added to help where some routes have speed restrictions without warning signs.

To enable this warning to be sent to the serial port I have added the line

'Warning=SpeedLimit=SpeedLimit' to the ControlNames.txt file. If you are updating from an earlier version then you will need to add this line to the end of your ControlNames.txt file.

The data sent will be SpeedLimit:SpeedLimit:60 the 60 being whatever the next speed limit is.

```
Data[0] = SpeedLimit
```

```
Data[1] = SpeedLimit
```

```
Data[2] = 60
```

(Both Modes)

1. When editing a button map I have added another menu option to the menu that appears when you right click on a row. It's called "Copy Command" and will allow you to make a copy of the selected command. This is to allow users who want to use two buttons to turn something on and off such as the wipers with 'V' and 'Ctrl+V'.

You create the first command and assign it the 'V' key, then make a copy of it and just change the

keys to Ctrl+V. This applies to any commands such as increasing/decreasing headlight or wiper speed etc.

16/04/20 V3.2.1 Released

1. Updated the program to allow you to send the same data to more than one serial port. This is so that you can have one Arduino controlling servos or stepper motors for the speedometer and a second Arduino displaying the current speed on a lcd or 7 segment displays or illuminating a led if you are speeding. All these functions require the same speed data and in previous versions you could only sent this to one Arduino.
2. Updated the Output Data To Serialports manual to reflect the change at 1.
3. Moved the manuals to the Manuals folder inside the TS2017 Raildriver and Joystick Interface folder and created a new Quick Start guide to make it clearer to new users where to extract the zip file to.

11/10/20 V3.2.2 Released

Added the option in the button map to also assign a lever instead of a button to a keyboard command. This will allow a user to use pedals from a racing sim or flight sim as a DSD pedal. See the updated Edit Button Map on pages 6-8.

24/01/21 V3.2.3 Released

Added Lever Maps for the SearchlightSimulations AC4400 & SD40 so you are no longer required to edit the ones created automatically.

Updated the output to serial port to allow the Time to be displayed correctly.

20/02/2021 V3.2.4 Released

1. Advanced Mode:- Updated the “New_Engine_Template.lua” & “Alternative_New_Engine_Template.lua” files to work with the Virtual Railroads VR_BR185_2_EL, if you are having trouble getting their other trains to work then it may be worth running the data extractor again and see if the loco is now fixed.
2. Both modes, I have supplied an update lever map for the VR_BR185_2_EL which allows you to use the quick release of the TrainBrake, you will need to put the lever back to release before the throttle will work.

26/02/2021 V3.2.5 Released

1. Fixed an error that crept in in V3.2.4 which stopped Standard Mode from working.
2. Added fixed lever maps for the Armstrong Powerhouse Class 411/412 which sets the VirtualBrake to Enabled.

11/04/2021 V3.2.6 Released

1. Adjusted the code so that more sifa/cruisecontrol commands can be displayed on the Raildriver or sent through the serial port.
2. It is now possible to use the hat switch on a joystick as 4 separate buttons.
3. Added the option to now split the axis of a joystick into two when assigning it as a button which means, one end of travel can be one button and the other end can be a second button. See page 8 above. This means you can now use your flight sticks as buttons too.

An example of it's use would be as the brake lever on a class 66 which is center sprung. Assign the apostrophe key to the down side of the axis and the semicolon to the up side of the axis.

You will need to first add a new command for this see page 8 section 4e.

Another option would be to assign the Space key to the left side of the axis and the B key to the right side to give you the high/low horn.

13/11/2021 V3.2.7 Released

1. Fixed problem with Virtual Railroads not displaying sifa properly on the Raildriver.
2. Fixed a problem where the rotation controls were not assigned correctly in last update.

28/08/2021 V3.2.8 Released

1. Added script fixes for both the Clinchfield and Wasatch EMD F7's
2. Removed the option to split the levers when assigning levers as this only applies when assigning the lever as buttons.
3. Improved detection of the Rx, Ry, Rz and sliders axis on joysticks when assigning them.

02/09/2021 v3.2.9 Released

Fixed small bug in allocating Rx, Ry and Rz axis.

01/04/2022 v3.3.0.1 Released

1. Added a new option in the File menu called "**Check For Updates**". The program will check the download website to see if there is an update available for the software.
If there is, it will ask you if you wish to download it, if you say Yes, you will be directed to the download site. It does not do an automatic install you still have to copy the downloaded files over yourself.
2. Added a new option on the Settings menu called "**Automatically Check For Updates**". This does the same as 1 above, but it will check every time the program starts.
3. Your ControlNames.txt file will no longer be overwritten when you copy a newer version over an old version. Instead of updating the ControlNames.txt file, the program will merge any controls from the Updates\ControlNames.txt if it exists.
4. Improved the code so that when you start a scenario, TS will try to match the train switches with your physical switches in your home made cabs.
5. Removed the double check nag when assigning buttons in a buttonmap
6. The program now forces an update of the serial data sent when a loco is changed.
7. Script fixes and LeverMaps added for the "Gold Star DR73106 Ballast Tamper", "D&RGW SW1200", and "Baldwin Consolidation - from Clear Creek Old Timer Rolling Stock Pack Add-On"

Thanks to GWRDevon.

8. Updated the program so you no longer have to press the W key to get the following trains working.

"Kuju..RailsimulatorUS..SD40-2 Black"

"Kuju..RailsimulatorUS..SD40-2 BNSF Heritage"

"Kuju..RailsimulatorUS..SD40-2 BNSF Snoot"

"Kuju..RailsimulatorUS..SD40-2 BNSF"

"RSC..SD40BnPack01..SD40-2 Burlington"

"RSC..SD40SfPack01..SD40-2 Santa Fe"

"RSC..SD40WnPack01..SD40-2 WideNose"

"RSC..SD40BnPack02..BN SD40-2"

"RSC..SD40BnsfPack01..BNSF SD40-2 H1"

"Kuju..RailsimulatorUS..Union Pacific SD40-2"

"DTM..U50-UP..GE U50 UP"

Thanks to Jareb and Roger.

01/05/2022 v3.3.0.2 Released

1. Changed the name of the program to TS Classic Raildriver and Joystick Interface.
2. Updated the program to use the latest Net framework 4.8 because Microsoft stopped supporting v4.0 and this stopped the check for updates working in the last update.
3. Included the Net 4.8 web update and offline install programs in the Net 4.8 folder

02/05/22 v3.3.0.3 Released

1. Updated the Quick Start guide advising new users to run the Net 4.8 web/standalone install to ensure they have/install Net 4.8 or my program won't run.

16/10/22 V3.3.0.4 Released

1. Fixed a bug that caused the program to crash for some when enabling "Settings\Reset Controls On Scenario restart"
2. When saving an existing button map, after confirming you wish to save, the file is now saved without asking you for the file name.

29/10/24 V3.3.0.7 Released

1. Added Lever Map fix for the Searchlight Simulations EMD SD70ACU - CANADIAN PACIFIC.

25/07/25 V3.3.0.8 Released

1. Improved the working of the wipers when running in Standard Mode, and added code that will help identify missing wiper commands from your lever maps so that you can add them manually. See the "Adding missing wipers to lever maps in V3.0.0.8.pdf" in the Manuals folder.
2. Added automatic support for the TSC-X controller from Sim Workshop. See the Quick Start - TSC-X Controller.pdf.

This software is provided for free to be used by anybody with the only licencing restriction being not for commercial use.

I hope the Raildriver program is of use to you and works well, please let me know on the forum or by email.

Regards

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