

TS-Telemetry Version 2.0.3.1

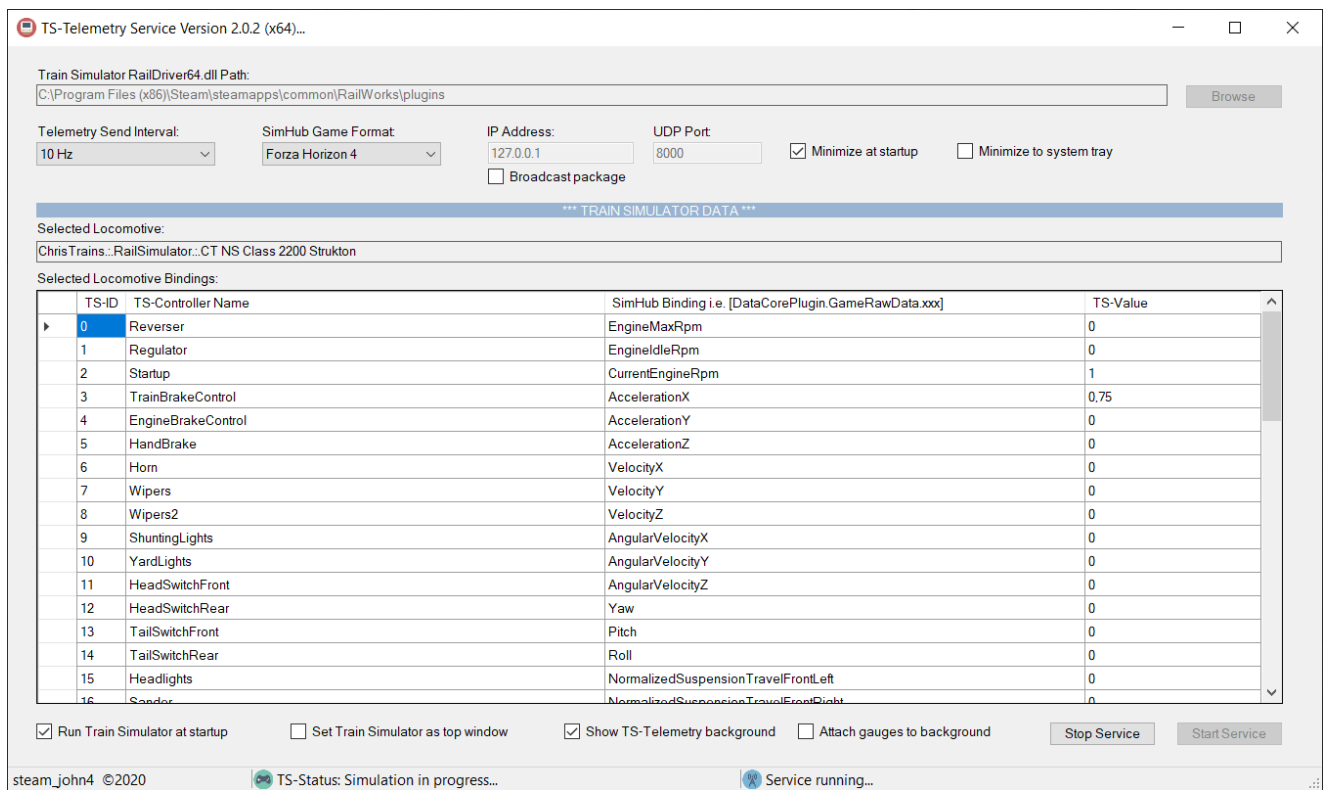
Introduction

TS-Telemetry is an application that makes it possible to show locomotive gauges outside Train Simulator or send the values to a Dash Board application like SimHub. In order to do so TS-Telemetry uses the RailDriver64.DLL provided with Train Simulator. TS-Telemetry also has his own gauges meaning it can be used without a Dash Board application, i.e. stand alone.

TS-Telemetry is free for personal use, commercial use is not allowed without written permission from the author. TS-Telemetry is supplied as is and no rights can be derived by the use of this software.

TS-Telemetry needs at least .NET framework 4.6 and the Electronic Highway Sign font must be installed in order to show the digital gauges with the dotted characters.

At the moment TS-Telemetry is only available in a 64-bit version.



Installation

TS-Telemetry does not come with an installer. Just Unzip the TS-Telemetry.zip into a preferred folder. The TS-Telemetry.zip contains four applications, TS-Telemetry (x64).exe, aGauge.dll, SharpDX.dll and SharpDXDirectInput.dll. After running TS-Telemetry and using his own gauges a TS-Telemetry.ini and a TS-Telemetry.pad will be added. If you already have a TS-Telemetry installation just unzip the files into that folder, by doing so you can keep your previous gauge and gamepad configurations.

Using TS-Telemetry

The use of TS-Telemetry is straight forward and simple, just a few settings have to be done.

Train Simulator RailDriver64.dll Path:

This text box holds the path to the RailDriver64.dll. If Train Simulator was installed with Steam this path should already be correct. If not, use the browse button and browse to the RailDriver64.dll path. Select the RailDriver64.dll and click Ok. If all went well TS-Telemetry will automatically start the telemetry service.

Telemetry Send Interval:

This sets the Read/Send interval for the gauge values. The default setting is 10 Hz (Max) i.e. 10 times per second and can be lowered to 1 Hz in steps of 1 Hz.

SimHub Game format:

This is the data package format used to send data to SimHub. For now, only the Forza Horizon 4 format is supported. If you use a Dash Board application like SimHub, this is the game to select within the Dash Board application.

IP Address:

This is the IP address of the computer where the Dash Board application is running. Normally this will be the same computer so the default of 127.0.0.1 (local host) will be correct.

Broadcast package:

This enables or disables the sending of the UDP packages on the network. If you don't use SimHub then uncheck this setting.

UDP Port:

This holds the port number to use for sending the UDP packages. 8000 is the default port for Forza Horizon 4.

Minimize at startup:

Setting this will minimize the TS-Telemetry application to the taskbar at startup.

Minimize to system tray:

Setting this will put the TS-Telemetry application into the system tray when minimized. To bring it back up just double click on the system tray icon.

Selected Locomotive:

This text box will display the name of the current i.e. player locomotive.

Selected Locomotive Bindings:

This shows a list of all available controllers i.e. gauges for the selected locomotive.

- TS-ID: shows the controller ID for Train Simulator.
- TS-Controller Name: shows the name for the controller provided by Train Simulator.
- SimHub Binding: shows the controller name to be use within SimHub.
- TS-Value: shows the current value for the controller provided by Train Simulator.

Double clicking on a row within the list will open the Add Gauge Form and offers the possibility to add a TS-Telemetry gauge.

Run Train Simulator at startup:

Setting this will automatically start Train Simulator after TS-Telemetry has started up. In this case closing Train Simulator will also automatically close TS-Telemetry.

Set Train Simulator as top window:

Setting this will make Train Simulator the top window. This means that only TS-Telemetry can go on top of Train Simulator. All other windows will stay behind it. Note that other applications if smaller in window size will not be visible!

Show TS-Telemetry background:

Setting this will show an extra background Form with an image.

Attach gauges to background:

If the background is visible and TS-Telemetry gauges are used, this setting will attach the gauges to the background form. This Form will behave as a parent for the gauges and moving this Form will take the gauges with it. Note that closing the Form will also close the gauges.

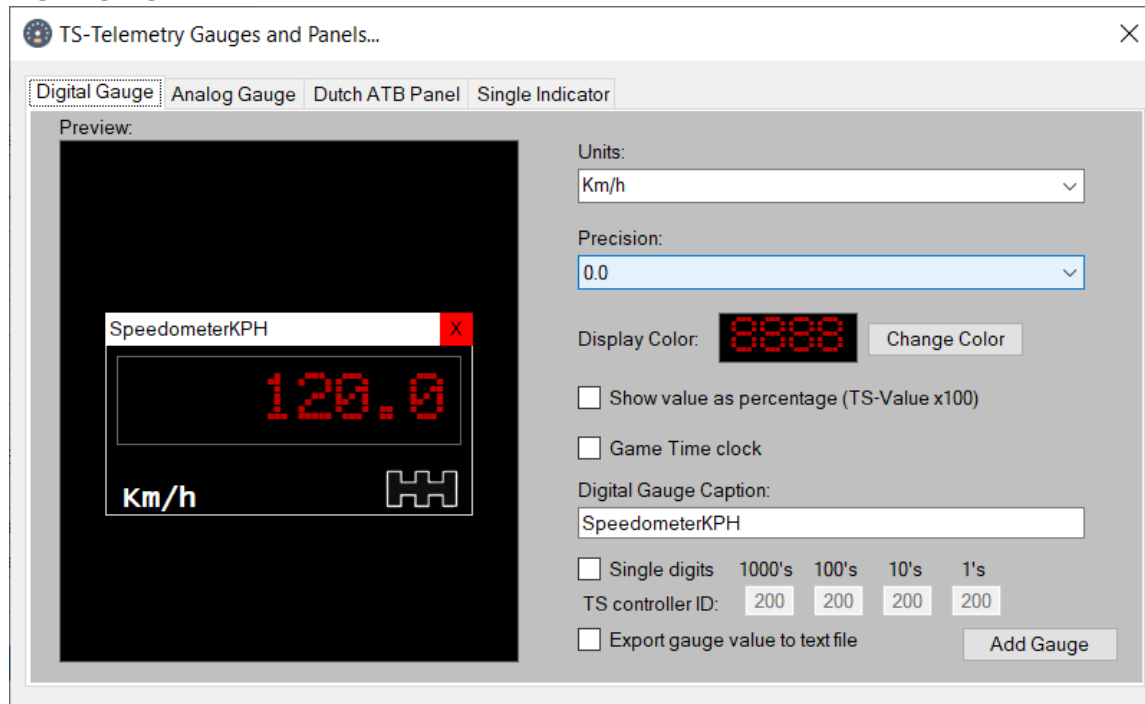
Start and Stop Service button:

Use these buttons to Start or Stop the telemetry service. Stopping the service will also stop reading values from Train Simulator, i.e. TS-Values in the bindings list will not be updated anymore.

Add a TS-Telemetry gauge

Adding a TS-Telemetry gauge is simple. When a simulation is running the Bindings, list is filled with the available controllers. To add a gauge just double click on the row that you want the gauge for. The configuration Form will come up. Here you can select the gauge you want, digital, analog, ATB panel or a single indicator.

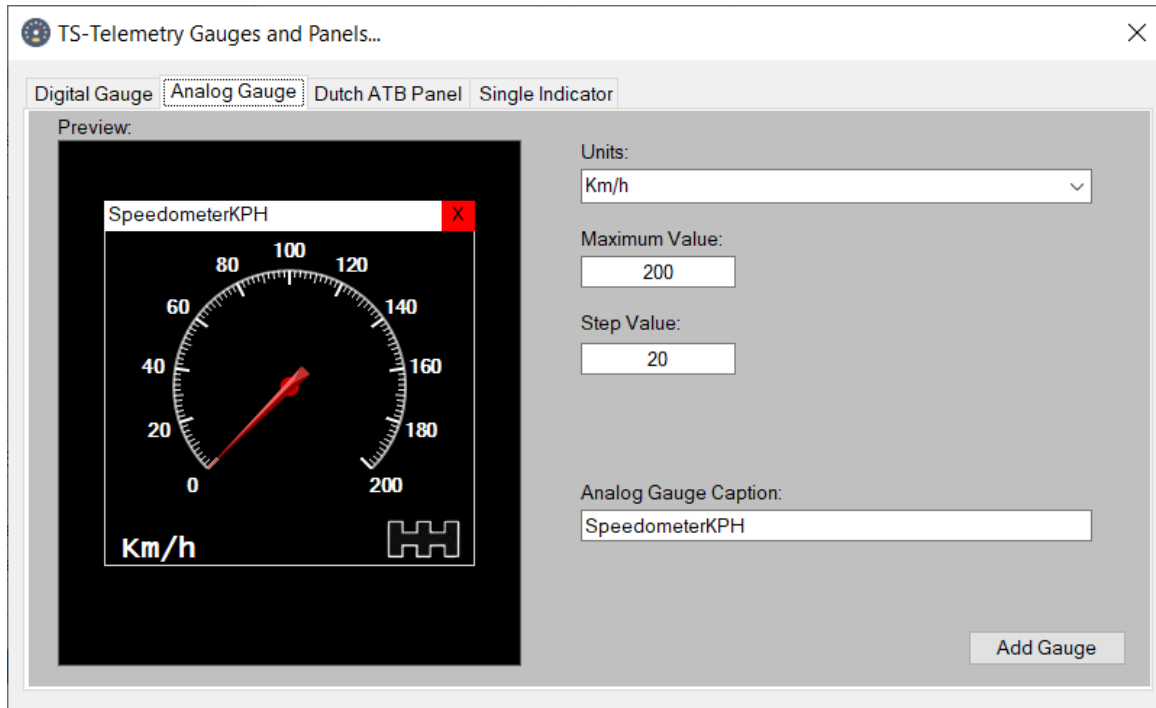
Digital gauge:



- Units: Here you can select the units for the gauge. The dropdown has a few predefined units but you can also type a your own.
- Precision: Here you can select the precision, 0, 0.0 or 0.00.
- Display Color: Here you can select the color for the digits.
- Show value as percentage: Selecting this will show the value with a percentage sign. It will multiply the TS-Value by 100 and can be used for speed or brake controllers that have a value from 0 to 1.
- Game Time clock: This setting will turn the display into a digital clock holding the game time.
- Digital Gauge Caption: Here you can type the caption of the gauge. Default it will take the controller name.
- Single Digits: This option let you combine controllers that are single digits. If you look at the first image you will see that there are 3 controllers, TargetSpeed100, TargetSpeed10 and TargetSpeed1 i.e. Controller ID 7, 8 and 9. By filling these ID into the textbox below the 100, 10 and 1 so 7 for the 100's, 8 for the 10's and 9 for the 1's, the gauge will display these digits as one value. By leaving the 1000's on ID 200 a leading zero will be displayed. If you don't want a leading zero replace the 200 by 199. So, ID 200 and ID 199 are reserved for this purpose:
 1. ID 200 = leading zero digit
 2. ID 199 = blank digit

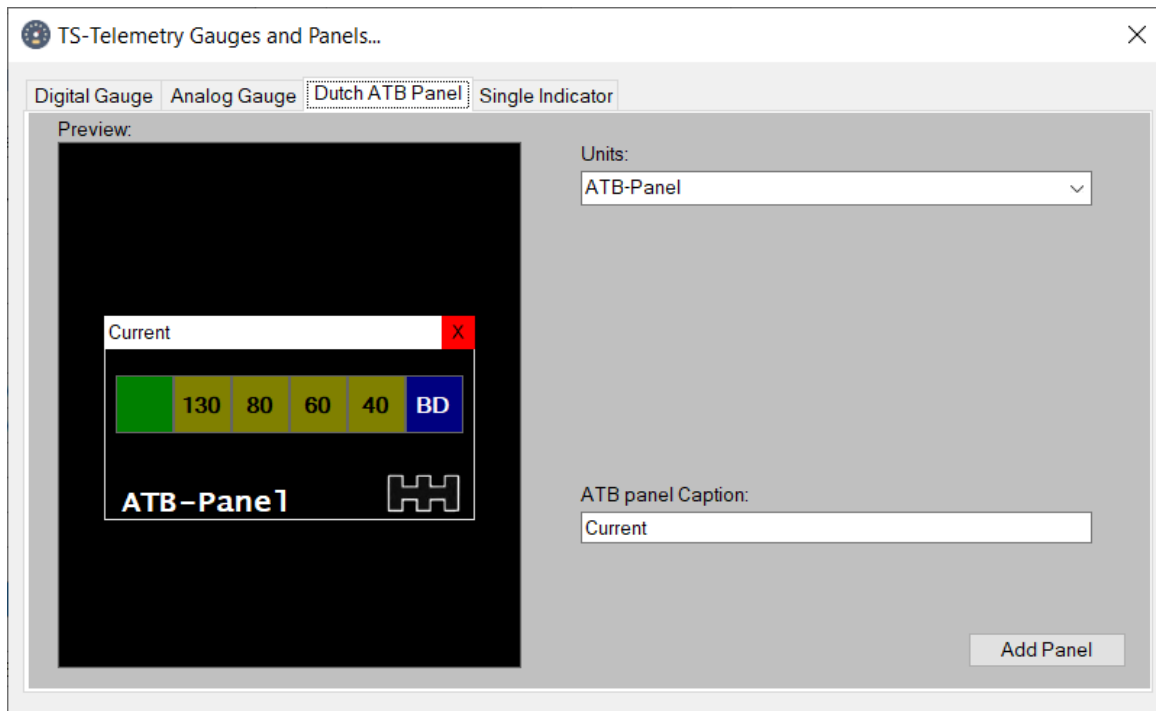
- Export gauge value to text file: This option will save the gauge value into a text file. This option is only for streaming purpose. Do not use this in normal game mode! The gauge caption will be taken as file name. The value will only be updated if it changes with an interval of 500ms. If this option is turned on a little disk icon is showed within the gauge.

Analog gauge:



- Units: Here you can select the units for the gauge. The dropdown has a few predefined units but you can also type a your own.
- Maximum Value: Here you can type the maximum value for the gauge.
- Step Value: Here you can type the steps between 0 and maximum.
- Analog Gauge Caption: Here you can type the caption of the gauge. Default it will take the controller name.

Dutch ATB Panel:

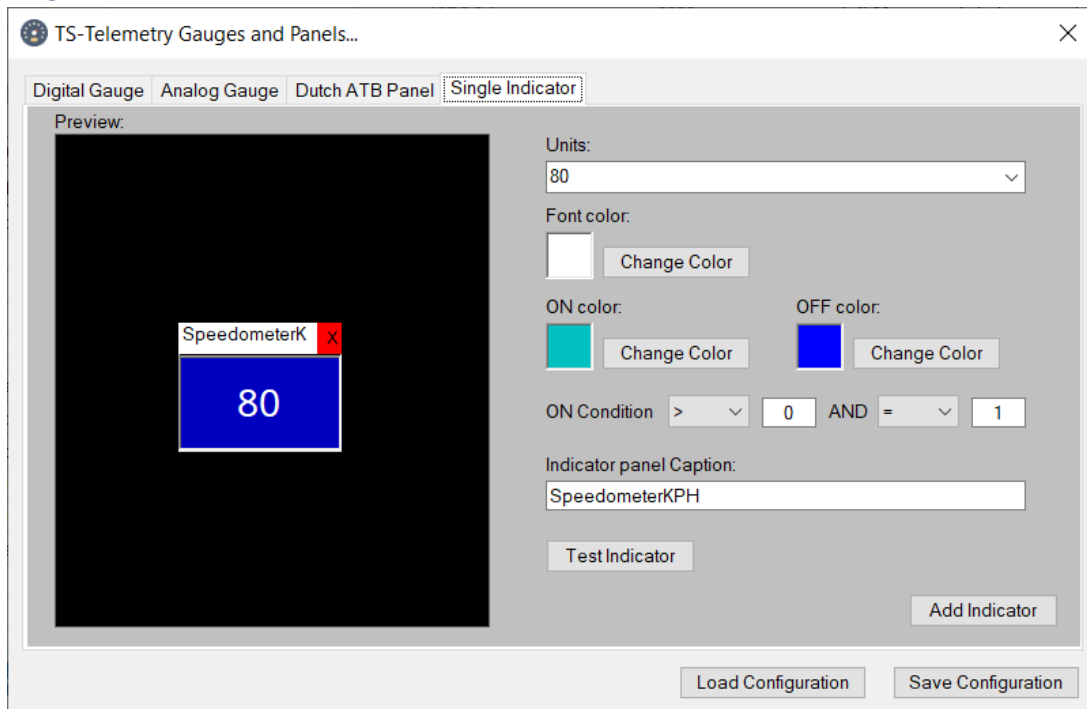


- Units: Here you can select the units for the gauge. The dropdown has a few predefined units but you can also type a your own.
- ATB panel Caption: Here you can type the caption of the panel. Default it will take the controller name.

The lights will be lit according to the following algorithm:

1. Value = < 0, All off
2. Value = 0, the BD light
3. Value > 0 and <= 40, the 40 light
4. Value > 40 and <= 60, the 60 light
5. Value > 60 and <= 80, the 80 light
6. Value > 80 and <= 130, the 130 light
7. Value > 130, the green light

Single Indicator:



- Units: Here you can select the units for the gauge. The dropdown has a few predefined units but you can also type a your own.
- Font color: To select the color for the font.
- ON color: To select the color for the ON state.
- OFF color: T select the color for the OFF state.
- ON Condition: To set the rule for ON state.
- Indicator panel Caption: Here you can type the caption of the panel. Default it will take the controller name.
- Test Indicator: Clicking this will show the on state within the preview.

By clicking the Add button a new Form holding the gauge will be created. Gauges added for a locomotive will be saved and the next time you choose the locomotive the gauges will come up again.

By clicking a gauge form to give it the focus, pressing F1 will show a properties window of the selected gauge.

TIP! Use the background Form as parent for gauges, moving them to a second screen will be much easier.

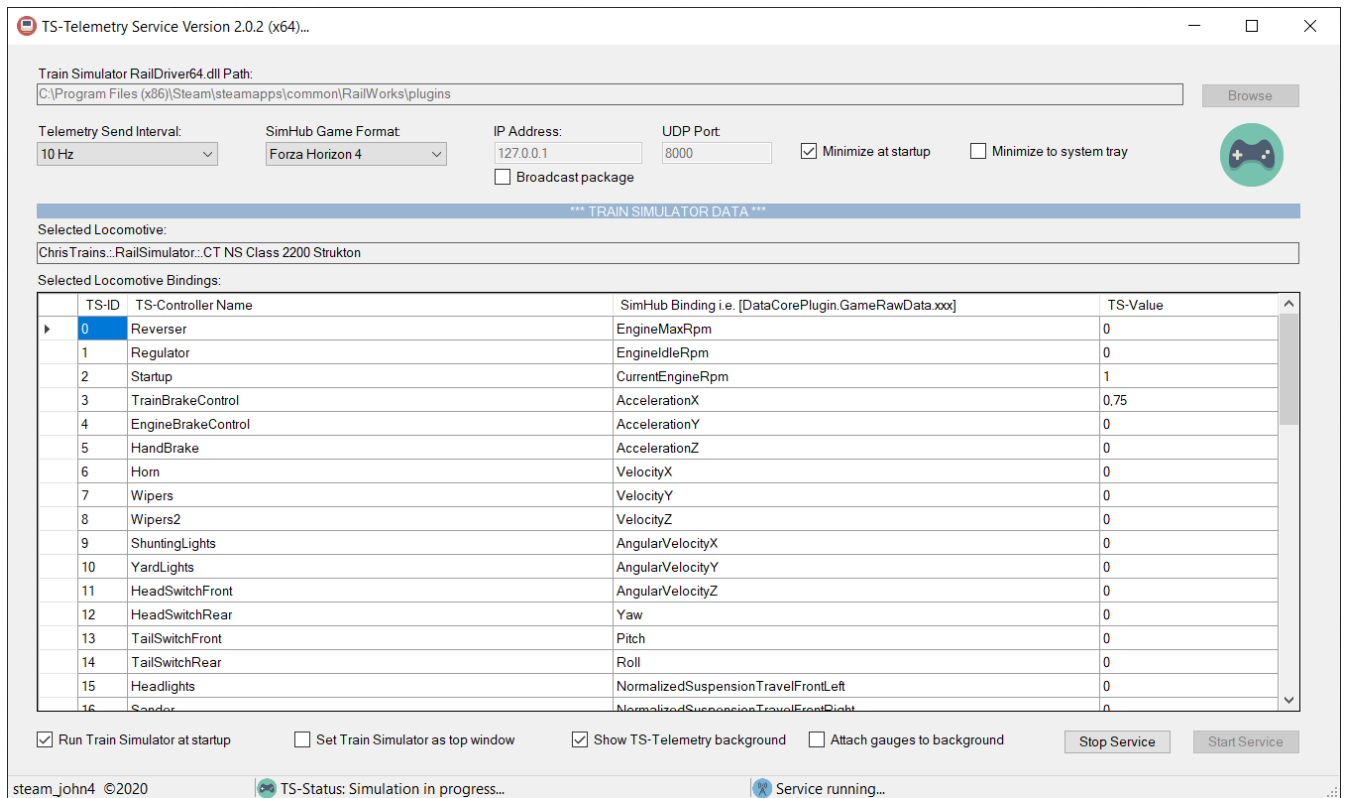
The load/save configuration will store or read the complete gauge and gamepad configuration for the current loco. This can be handy if you have the same loco in different liveries.

Game pad interface:

As of version 2 a Game Pad interface is implemented.

To use this, plug in your Gama Pad before starting TS-Telemetry!

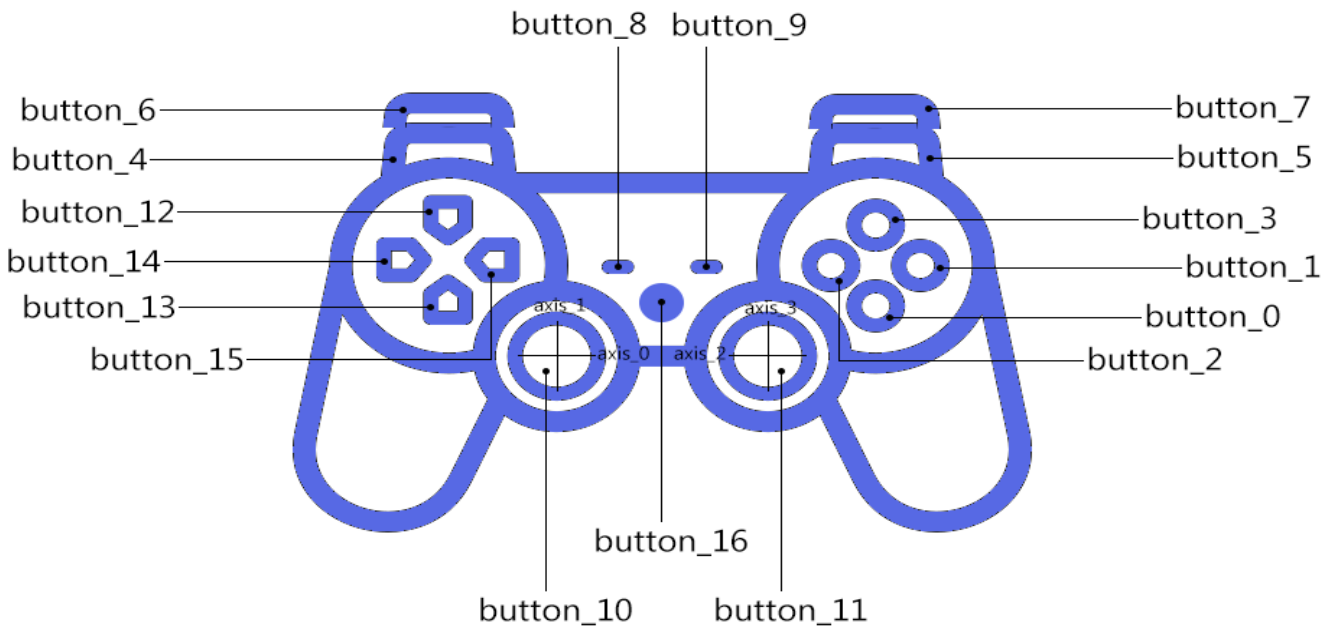
If the simulation is running, TS-Telemetry will automatically find it and a Game Pad icon will appear.



Xbox and PC compatible gamepads can be directly used with TS-Telemetry. To use a PS4 gamepad you must download and install DS4Windows. The PS4 gamepad is not compatible with windows and the DS4Windows application emulates the PS4 gamepad as Xbox gamepad. So first run DS4Windows and then start TS-Telemetry.

Game Pads have a spring into the joysticks to center them on release. This makes it hard to drive with linear values, you must constantly hold the stick. To overcome this the Joysticks will work as a up and down lever (holding it will automatically step) and has the following default configuration:

NOTE: TS-Telemetry will try to find those default settings but due to so many loco configurations and controller names it will not always succeed. In those cases, you will have to configure to gamepad settings by yourself.



axis1 = Left stick Y axis, Throttle. Pressing the stick, button_10, will set the control value back to zero.

axis3 = Right stick Y axis: Brakes. Pressing the stick, button_11, will set the control value back to zero.

button_0 = A button: Instrument Lights (default try)

button_1 = B button: Horn (default try)

button_2 = X button: Reverser (default try)

button_3 = Y button: Head Lights (default try)

button_4 = Left L1 button: toggles between Cab, Front and Rear view (like pressing 1,2 or3 on the keyboard)

button_5 = Right R1 button: Show the time table (like pressing F1 on the keyboard)

button_12 to button_15 (D-pad) = These four buttons on the top left (above the left stick) are used to move the camera (Arrow keys)

button_8 = Left button in between the sticks shows HUD small (like pressing F3 on the keyboard)

button_9 = Right button in between the sticks shows full HUD (like pressing F4 on the keyboard)

button_16 = Will activate and show Windows game mode.

Button_6 and button_7 are not used.

By clicking the Game Pad Icon in the TS-Telemetry window, a Joystick setting window will appear.

The screenshot shows a window titled "Joystick settings..." with a close button (X) in the top right corner. The window contains the following configuration options:

Axis/Button	Min	Step	Max	ID	Toggle
Left Y axis	0	0.1	1	1	
Right Y axis	0	0.1	1	3	
Button 1 (A)	28		0	1	<input checked="" type="checkbox"/>
Button 2 (B)	6		0	1	<input type="checkbox"/>
Button 3 (X)	0		-1	1	<input checked="" type="checkbox"/>
Button 4 (Y)	15		0	2	<input checked="" type="checkbox"/>

Here you can configure your own functions for the sticks and the four A, B, X and Y buttons.

The stick Y axes can also be used as a switch.

To do so set the step value to 0 and set the Min and Max to the switch value. For example:

Min = -1, Step = 0, Max = 1 and ID = 3.

By pushing the stick forwards, the value 1 is send to controller 3. By pushing the stick backwards, the value -1 is send to controller 3.

Toggle for the buttons means it will step up to the max value and then start at the min value again. So, for Button 3 in the image above pressing the button once will send 1 to controller 0. Pressing the button again will send -1 to controller 0 and another press will send 0 to the controller.

If toggle is not selected, pressing the button will send the Max value to the controller and releasing the button will send a 0 i.e. pulsing.

For the 4 buttons there is also an option to send keyboard key values to Train Simulator.

To do so set ID to -1 and set the Max value to the corresponding key value (in decimals!). For Example:

ID = -1 and Max value is set to 84. Pressing the button on the gamepad will be the same as pressing T (doors) on the keyboard.

NOTE: The value for the key must be in decimals! In the example the T on the keyboard has a hexadecimal value of 0x54 this is 84 decimals.

Key codes can be found at the <https://docs.microsoft.com/en-us/windows/win32/inputdev/virtual-key-codes>

About SimHub

If you want to play around with SimHub it can be downloaded at <https://www.simhubdash.com/>

Standard there is no Dash Board available for trains so you have to edit one yourself. Please read the SimHub manual how to edit and develop your own Dash Board.

For now, TS-Telemetry only send the first 52 Train Simulator controller values within the UDP package. This is due to the fact that the Forza format cannot handle more. TS-Telemetry automatically assign's these controllers but a kind of mapping would be preferable here.

I hope this little manual is helping you on track with TS-Telemetry. Comments are always welcome but do not forget, TS-Telemetry is made as a hobby and not as a commercial application.

Just play around with settings and Have fun,

Steam_john4