



Introduction

Congratulations! You have purchased the TrainworX IC 2020 pack. This is an add-on (DLC). You need to have an active installation of Train Simulator 2020 or later for this add-on to work. Please take the time to read this manual before driving off in your new engine. After the Re 460 this was a logical next step. This Trainset is a bit heavy on polygons and have large scripts which has not showed any issues while testing. On slower computer systems or high load routes however there might be some lagging. This might be mitigated by changing your graphics settings. I hope you like the product and have many hours of fun with it. This add-on is officially licensed by SBB CFF FFS in Bern Switzerland.

For more information and updates please visit : www.trainworx.nl and like/follow my Facebookpage : <https://www.facebook.com/TrainworX4Trainsimulator>

Special thanks

I want to express special thanks to some people without whom this product never would have seen the light. First off all many thanks to Chris Longhurst (www.christrains.com) who has helped numerous times during the building process. I hope to, one day, reach his level of quality on my builds. Thanx Chris! Also thanks to the Beta testers. Danke Schön!

Installation

The downloaded zip file contains an installer for Train Simulator TS20XX, this manual and EULA. Please read the EULA carefully before installing this software. This software is PAYWARE and may not be redistributed in any way or form without written consent from the author (TrainworX).

1. Start the installer : TwX_IC2020_Vxx.exe. The xx is the current version.
2. Your new assets will now be installed in the 'TrainworX' assets folder.
3. If you want to use the add-on in your scenario please make sure you activate 'TrainworX-TwX_IC2000' in the assets box (on the right)



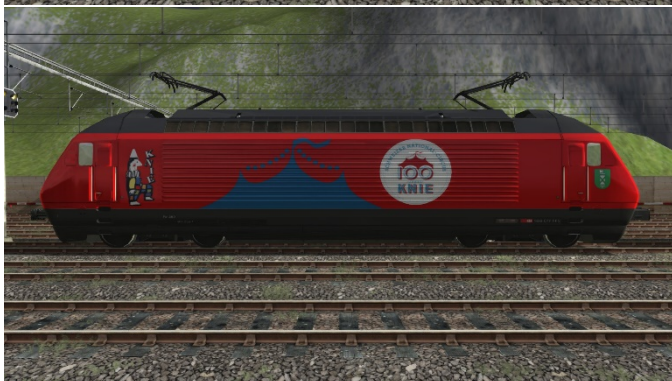
Included versions

This pack includes 14 Re 460's, 7 IC 2020 wagons and 5 versions of the older IC 2000 wagons:

- 014, 016, 024, 026, 058, 066, 075, 083, 091, 098, 102, 105, 117, 118 Re 460 engines
- Bt 2000, Bt 2020 and Bt 2020 'Ticki' (Cabcars, listed under engines in the game)
- B 2000 and B 2020 (2nd class wagons)
- A 2000 and A 2020 (1st class wagons)
- AD 2000 and AD 2020 (First class. Bagage wagons)
- WRB 2000, BR 2020 and WRB 2020 (Bistro/Restaurant wagons)

IC 2000

IC 2020

Re 460



There are 9(18) preinstalled (QD) consists included:

IC2000



- 1a - IC2000 70 (Bt,B,B,B,B,A,A,AD,Re460)
- 1b - IC2000 70 reverse (Re460,AD,A,A,B,B,B,B,Bt)



- 2a - IC2000 72 (Bt,B,B,B,WRB,A,A,AD,Re460)
- 2b - IC2000 72 reverse (Re460,AD,A,A,WRB,B,B,B,Bt)



- 3a - IC2000 73 (Bt,B,B,B,WRB,A,A,A,AD,Re460)
- 3b - IC2000 73 reverse (Re460,AD,A,A,A,WRB,B,B,B,Bt)

IC2020



- 1a - IC2020 70 (Bt,B,B,B,B,A,A,AD,Re460)
- 1b - IC2020 70 reverse (Re460,AD,A,A,B,B,B,B,Bt)



- 2a - IC2020 72 (Bt,B,B,B,BR,A,A,AD,Re460)
- 2b - IC2020 72 reverse (Re460,AD,A,A,BR,B,B,B,Bt)



- 3a - IC2020 73 (Bt,B,B,B,WRB,A,A,A,AD,Re460)
- 3b - IC2020 73 reverse (Re460,AD,A,A,A,WRB,B,B,B,Bt)

IC2000/2020 mixed



- 1a - IC2000/2020 (Bt,A,B,B,B,A,AD,Re460)
- 1b - IC2000/2020 reverse (Re460,AD,A,A,B,B,A,Bt)



- 2a - IC2000/2020 (Bt,B,B,B,BR,A,A,AD,Re460)
- 2b - IC2000/2020 reverse (Re460,AD,A,A,BR,B,B,B,Bt)



- 3a - IC2000/2020 (Bt,B,B,B,WRB,A,A,AD,Re460)
- 3b - IC2000/2020 reverse (Re460,AD,A,A,A,WRB,B,B,B,Bt)



You are obviously free to make your own consists. There are many possibilities. Try mixing with Rivet Games EW IV wagons too. Just bear in mind that you cannot control the consists through the Rivet Bt/Re 460's. They can only be added as 'inactive' stock.

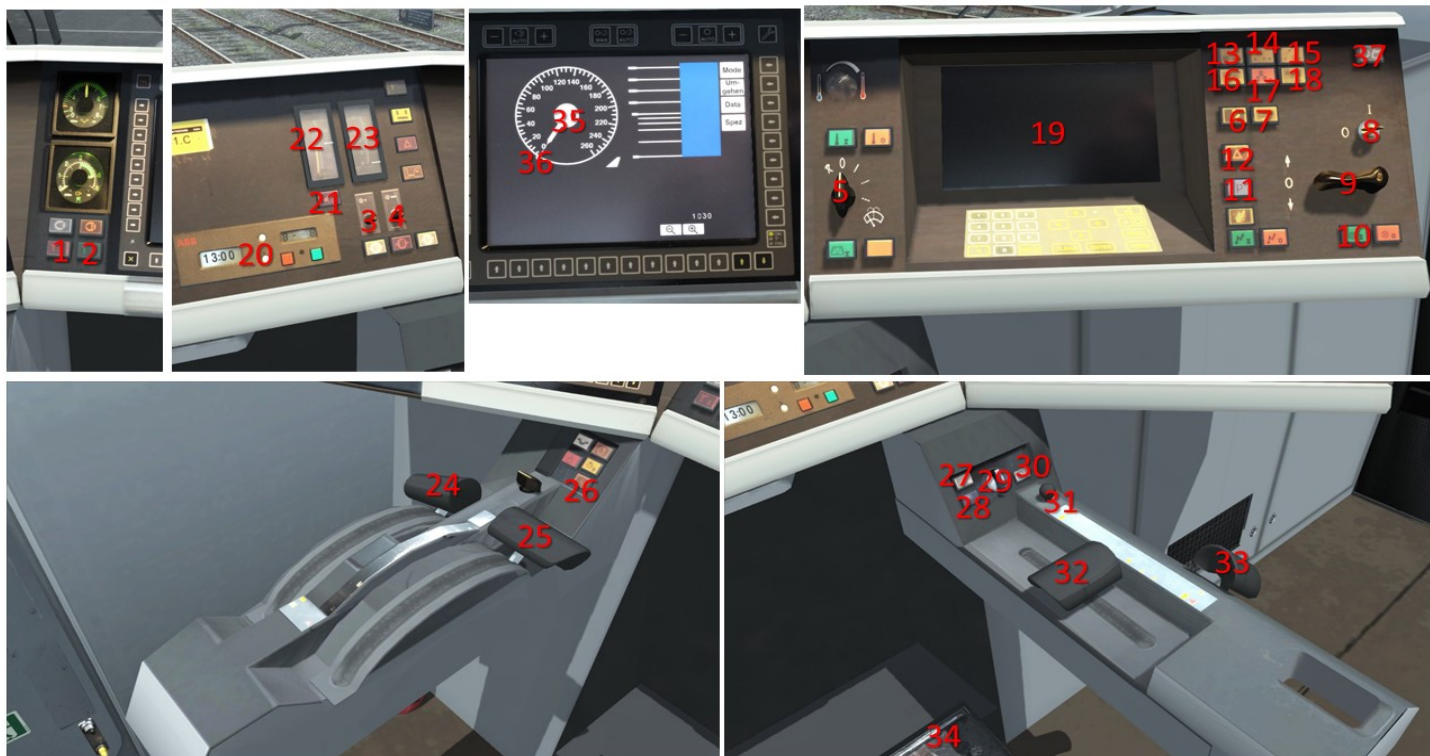
IMPORTANT: Please always position the Re 460 with the front (Cab 1) pointed AWAY from the IC wagons.

Controls

The pack comes with fully functional Cabs (Re 460 and Bt).

A quick guide is included with this install, please read it!

The controls are also explained below:



Nr.	English	German
1	PMS on	PMS Ein
2	PMS off	PMS Aus
3,4	Instrumentlights	Instrumentenlicht
5	Wipers	Wischer
6	Main switch	Hauptschalter
7	Panto up/down	Pantograf ab/zu
8	Contact	Steuerstrom
9	Reverser	Wendesalter
10	Servicelights	Dienstbeleuchtung
11	Parking	Parkstellung
12	Clear warnings	Entpannung
13	Light Front Left	Zugbeleuchtung Vorne Links
14	Light Front Top	Zugbeleuchtung Vorne Oben
15	Light Front Right	Zugbeleuchtung Vorne Rechts
16	Lokzug Lights	Lokzugbeleuchtung
17	Hazardlights	Warnbeleuchtung
18	Service Lights	Dienstbeleuchtung
19	Infoscreen	Information Schirm
20	ZUB	ZUB
21	Dynamic Brake Warninglight	Rekuperationsbremse warnung
22	Powermeter	Zugkraft
23	Voltmeter	Voltmeter
24	Enginebrake	Lokbremse
25	Trainbrake	Zugbremse
26	Sander	Sander
27	Schedulelight	Fahrplanlampe
28	Highbeam	Scheinwerfer
29	ZUB (AWS) warninglight	ZUB Lampe
29	AWS acknowledgement (ZUB)	ZUB sicherungs freigabe
30	ZUB Manoeuv switch (overrule AWS, max speed 40km/h)	Manoever Schalter
31	Horn	Typhon
32	Combined Regulator/Dynamic brake	Fahrhebel (Rekuperations Bremse)
34	Vigilancepedal	Wachsamkeitskontrollepedal
35	Speedometer	Geschwindigkeitsanzeige
36	Speedcontrol setting	V-soll Andeutung
37	Cabligh	Fuehrerstandlampe

Keyboard controls:

Use US international keyboard setting

KeyMapping SBB CFF FFS Re 460 V4.x - TrainworX							
Function	Funktion	Group	QWERTY		AZERTY	Action	Aktion
Auto Startup	Automatische aufrüstung	Drive	Ctrl	Shift	S	S	
AWS/ZUB	Zugbeeinflussung	Safety			Q	Q	Acknowledge
AWS/ZUB	Zugbeeinflussung	Safety		Shift	Q	Q	Override
Cabinelight	Fuehrerstandlampe	Lights			L	L	ON-OFF
Combined Throttle D-Brake	Fahrschalter (Rekuperationsbremse)	Drive			A	A	Forward
Combined Throttle D-Brake	Fahrschalter (Rekuperationsbremse)	Drive			D	D	Backward
Driving Current	Steuerstrom	Electric		Shift	S	S	ON-OFF
Enginebrake	Rangier(Zug)bremse	Brakes			Hook right (])	+-	Increase
Enginebrake	Rangier(Zug)bremse	Brakes			Hook left ([)	Ü	Decrease
Handbrake	Feststellbremse	Brakes			Slash (/)	-	ON-OFF
Highbeam	Fernlicht	Lights	Ctrl		F	F	ON-OFF
Horn	Pfeife	Safety			B	B	ON
Instrumentlight 1	Instrumentenbeleuchtung 1	Lights			I	I	Forward-ON
Instrumentlight 2	Instrumentenbeleuchtung 2	Lights		Shift	I	I	Backward-OFF
Main Switch	Hauptschalter	Electric			Z	Z	ON-OFF
Panto	Pantograph	Electric			P	P	Up-Down
Panto Choice	Pantograph Wahl	Electric		Shift	P	P	Front-Rear-Both
Panto Choice	Pantograph Wahl	Electric	Ctrl	Shift	P	P	Front-Rear-Both
PMS brake	PMS Bremse	Brakes		Shift	M	M	ON
PMS brake	PMS Bremse	Brakes	Ctrl	Shift	M	M	OFF
Rearview mirrors	Spiegel	Safety	Ctrl		S	S	Deploy/Fold
Reverser	Wendeschalter	Drive			W	W	Forward
Reverser	Wendeschalter	Drive			S	S	Backward
Sander	Zand	Drive			X	X	ON
Schedule	Fahrplan	Accessory		Shift	F	F	Cycle Forward
Schedule	Fahrplan	Accessory	Ctrl	Shift	F	F	Cycle back
Servicelights	Dienstbeleuchtung	Lights			H	H	ON-OFF
Speedcontrol	V-soll	Drive			Y	Y	Increase
Speedcontrol	V-soll	Drive			C	C	Decrease
Train Brake	Zugbremse	Brakes]]	Increase
Train Brake	Zugbremse	Brakes			[[Decrease
Vigilance safely acknowlegement	Wachsamkeitskontrolle Betätigung	Safety			Space	Space	Activate
Vigilance system	Wachsamkeitskontrolle	Safety		Shift	7	7	ON-OFF
Wipers	Wischer	Safety			V	V	OFF-SLOW-FAST
Wipers	Wischer	Safety		Shift	V	V	FAST-SLOW-OFF
Zug-Manoever	Zug-Manoever	Safety	Ctrl		M	M	ON-OFF

To change the destinationboards press **Ctrl F9 / Ctrl F10**.

Please note that the IC 2020 consists needs to be operated using the special IC2020 compatible Re 460 from the IC2020 pack.



First steps

Manual start

1. Steuerstrom (Key) ON (Ctrl-S)
2. Mainswitch ON (Z) – If you press the mainswitch within 3 seconds from turning the key, the panto will be activated automatically
3. *(Panto UP (P))*
4. Reverser Forward (W)
5. V-Soll to required speed (or 200 to drive manually)
6. Release (Switch off) Parkstellung
7. Check if Trainbrake is in Neutral (Fahrstellung)

Autostart

1. Press Ctrl-Shift-S
 - Steuerstrom will be set to On
 - Mainswitch and Panto will be activated
 - Reverser will be set to forward
 - Tempomat will be set to 40 kmh
 - Parkstellung will be released
 - Deadmans Safety system (Wachsam) activated. Press Shift-7 to switch off.
 -

Parkstellung

At start your engine will be in Parking Mode. Both pantographs are raised and a white light on either end of the engine will be lit. Also the PMS brakes will be switched on. Switching the Parking Mode off will automatically release the PMS brakes.

Wachsamkeitskontrolle

The SBB has a 'sifa' type vigilance system called 'wachsamkeitskontrolle'. This system is distance based under 100 kmh (not time based as German sifa is). Switch the system on by pressing **Shift-7**.

Speed under 20 kmh:

After 50 Meters : Audible warning

After 100 Meters : Emergencybrake with buzzer

Speed over 20 and under 100 kmh:

After 1600 Meters : Visual warning

After 1800 Meters : Emergencybrake with buzzer

Speed over 100 kmh:



The system switches to time-based measurement. Audible warnign after 30 seconds. Emergencybrake after 35 seconds.

The system is reset by pressing the **spacebar** (Acknowledge) or by moving the regulator or trainbrakehandle.

LIGHTS

The lights will be set automatically unless you press the Lights switch in the cab.

ZUB system

ZUB 121 System

The swiss ZUB safetysystem is simulated in this engine and reacts to the magnets on routes that have these. The system is compatible with Rivet Games's ZUB magnets. On routes without ZUB magnets this system will not work.

There are 3 ZUB modes:

1. No ZUB activation (no ZUB test sequence initiated)
2. ZUB simulation (Activated ZUB by running ZUB test)
3. Rivet Games ZUB magnets system (Activated automatically after passing a ZUB magnet with activated ZUB system)

If you don't activate ZUB, default AWS is used.

Activating ZUB

The ZUB system will be inactive by default. To activate it please follow the following steps:

- Start up the engine as descibed in 'First Steps'
- Press the green button on the ZUB panel
- A test sequence will now run which ends with a simulated brake test and the red ZUB button will light up.
- Press the red ZUB button to quit the test and activate the system
- Now set the trainbrake to 'release' and re-engage the main switch

ZUB 121 will now be active.



ZUB functions

The system will 'listen' to ZUB magnet information and show info on the ZUB display. By default a ZUB simulation is used. As soon as the system picks up a Rivet Games ZUB magnet, the system will automatically switch to using the information from the ZUB magnets instead.

When a restricted speed is sent by a warningsignal (Vorsignal), the system will calculate a braking-curve to get to the desired speed at the next main signal (Hauptsignal). A buzzer will sound if you go over the speedcurve. Slowing down quits the buzzer. Disrespecting speedlimits will eventually cause a forced brake (Zwangsbremsung).

Driving faster than the current speedlimit will cause a buzzer to sound at +5 kmh and a forced brake at +15 kmh.

Reset a warning by turning the ZUB switch to the right (Q).

When the next main signal shows stop (halt) the braking curve is calculated to a full stop at the signal. If the signal turns green (or something else than stop), you can free yourself from the braking curve by turning the ZUB switch to the left (Shift-Q). You can drive max. 40 Km/h now until you pass the next signal.

Please note that the system is a simulation and is not exactly as in reality. We will keep working to improve it where we can but are also limited by the game engine and track.

Wipers

To switch on the wipers turn the wiperswitch or press V/Shift-V. Positions are Off-Slow-Fast.

Schedule (iPad)

You can activate the iPad screen by dragging the screen up-down with your mouse or by pressing F/Shift-F. There are some schedules included for Zürich-Olten, SBB Route 1 and Lake Constance Route.

ECTS screen

The simulated ECTS screen shows current speed (dial and digital) and Vsoll (Set Tempomat speed). When Vsoll is set higher than current speedlimit (when available) the indicator turns red. When current speed is higher than current speedlimit the dials turn red. The function of the ECTS is emulated and depening on track/signal speedlimits which are route-dependant.

Manöver

Pressing the 'Manöver' switch will make it possible to pass red signals without SPAD or Emergencybrake. You have to stay under 40 Km/h (warning). This is normally used when shunting.



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