Operating instructions Speedbox Light

Thank you for choosing a RZTec Speedbox Light.

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1. general information about your speedbox light

- Connect the device with the included USB cable to a power source of your choice (USB socket of the PC, USB power supply(not included), Powerbank(not included), etc..)
- From 2m cable length an active USB hub with own power supply is recommended max. 5m cable length is possible
- Place the speedbox as close to the passing locomotive as possible.
- Set up the Speedbox on a straight piece of rail of at least 2 locomotive lengths.
- Especially with N gauge and smaller it can happen that the speedbox must be set higher than what is specified by the buffer height, please try different height settings.

Indicator LED

USB port

Height adjustable feet

Sensors

1. Status displays of the indicator LED

- Constant glow: Ready to connect
- Flashing at 1 second intervals: connected to software
- Flashing at ½ second intervals: Ready for measurement
- Rapid flashing during measurement: at least one of the two sensors has triggered or is occupied

2. Connect Speedbox to the PC and use it

- Driver installation:
  Please install the driver from the website only if Windows does not provide its own!
- Connect the Speedbox to the PC
- If the driver is not installed automatically, you can download it from www.rztec.de/Downloads/ for your operating system.
- On the side of the package you can see which driver you have to use, FTDI or CH340
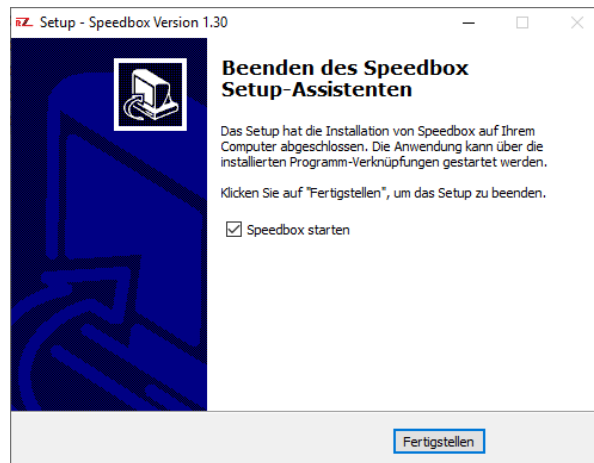- Download and install the Speedbox software
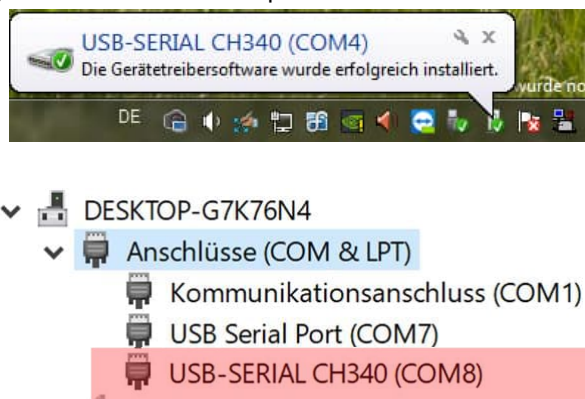
- Install the driver package if necessary,
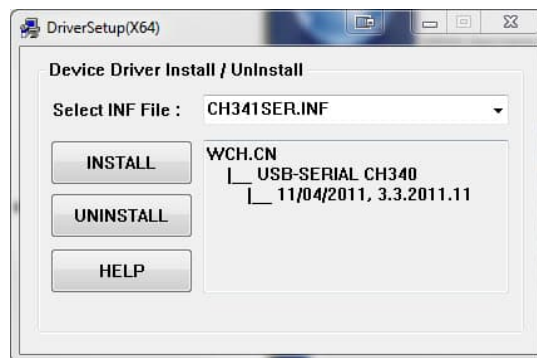
- Download and run the setup file
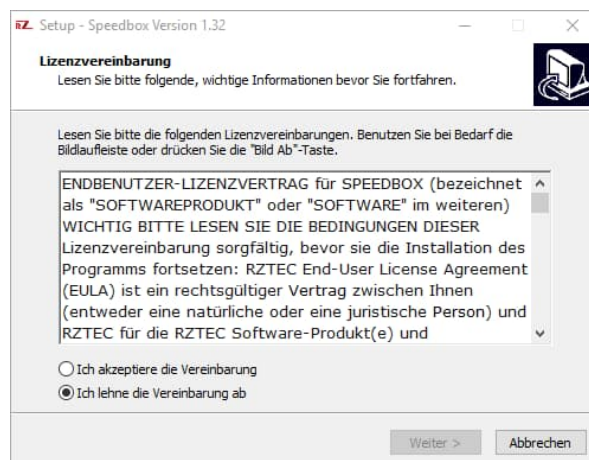
- Let us guide you through the setup

- If you don't get the note below about the ComPort of your Speedbox, please look in the device manager to find out the Comport.


- Launch the Speedbox application.

- Select your determined ComPort of your Speedbox in the selection field and click on connect

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- If you have selected an incorrect ComPort, you will receive a message that no Speedbox is connected to the selected port, please select another ComPort in this case.
- Click on "Connect" the Speedbox confirms with "flashing LED" and in the application the status is confirmed with the scale and version number
- Please select your track size in the selection field, the selection consists of G, I, 0 (UK), 0, 0 (US), S, 00, H0, TT, N (UK), N & Z the selection is then shown in the display of the speedbox
- Select your language in the Settings menu
- In the Settings menu, select units between metric (km/h & cm) and us (mph & inch)
- The selections in the Settings menu only take effect after restarting the app
- The Sppedbox takes over the settings after connecting

3. The information window
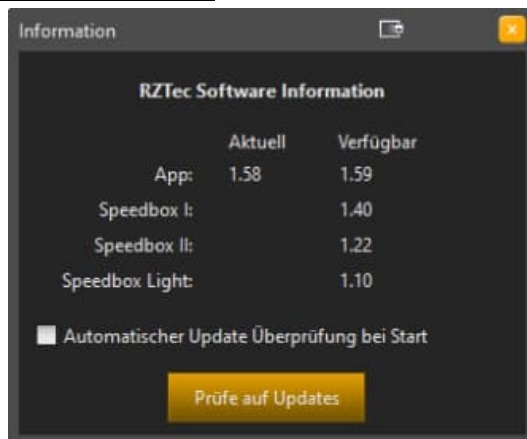
- Here you can check or uncheck the automatic update check when starting the app.
- If the automatic update check is switched off, the available versions can be called up via the button "Check for updates". If a newer version is available, the update is offered immediately via a message window.
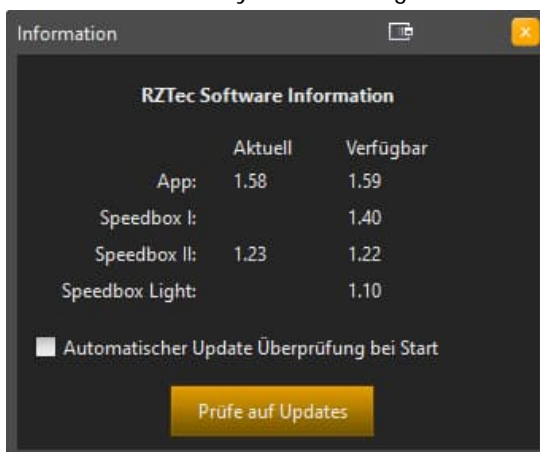
- If you are connected to your speedbox, you will be offered an update for your speedbox, if available. The current and available version is displayed.

- We recommend always installing displayed updates, as they contain not only new features, but also bug fixes.

4. Create your own measurement series
- The creation of own measurement series is used for vehicles with irregular driving behavior, to compare the driving behavior at different temperatures or to work out service intervals for his vehicles.
- Measurement series are ideally created on a track oval

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- In the Measurement Series menu, click Create Measurement Series to expand the app and display the Measurement Series field.
- CV measurement is not possible during measurement series creation.
- Click on Start measurement to start the measurement series.
- Up to 95 measurements per measurement series are possible.
- During the current measurement, an average value of the entire measurement series is calculated and displayed under the measurement series.
- If you notice an error, you can immediately start a new measurement series during the measurement by clicking on New.
- A measurement series can be paused or terminated by clicking on Stop measurement
- With a click on Export the respective measurement series can be saved in the formats Excel, CSV and TXT.
- The measurement series field can be closed in the menu Measurement series with Close measurement series, after that a CV measurement is possible again.

5. Calibration with Traincontroller Gold (from version 9)
   - Make sure that the locomotive to be measured is just in front of the speedbox and points forward in the direction of the speedbox.
   - Launch the Speedbox application
   - Click Connect
   - Do not enter values in CV5 and V Max
   - Start Traincontroller
   - Open the properties of the locomotive selected for calibration
   - Switch to the "Drive" tab and click here on Automatic mode
   - Click on "Advanced Fine Tuning..."
   - Switch to the "Speed profile" tab and open the Measurement selection field
   - From this, select the item "Measurement of the entire velocity profile with a third-party measuring device".
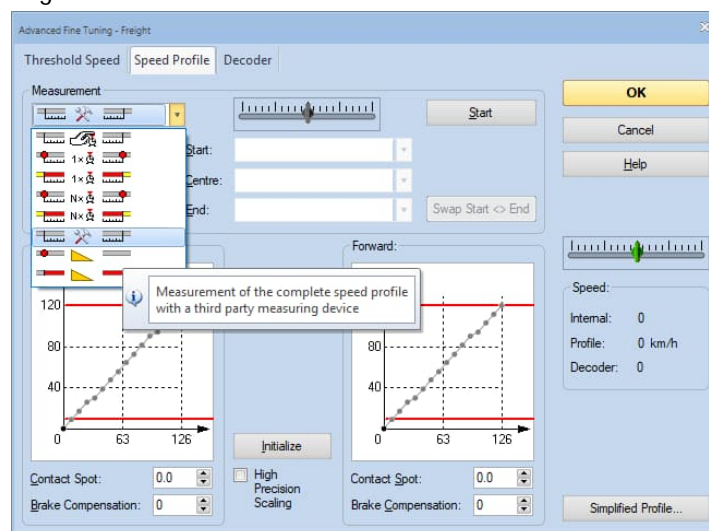
   - Choose the outlet so large that it is at least twice the length of the locomotive.
   - Now click on "Start measurement" in the Speedbox application, the application now always remains automatically in the foreground
   - Click on "Start" in the Traincontroller window
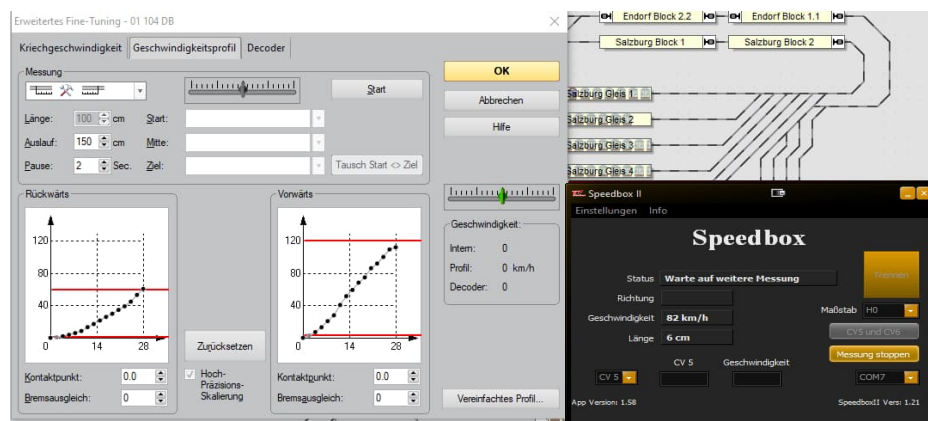
   - And then on "Automatic transfer
   - Now the automatic calibration process of Traincontroller starts

- The determined speeds of the speedbox are automatically transferred to Traincontroller.
- After completion the locomotive is calibrated and can be used in Traincontroller.
- Click on "Stop measurement" in the Speedbox application to end the value transfer to Traincontroller.
- Click on "Connected" to disconnect from the Speedbox.

6. <u>Calibration with Win-Digipet (from version 2018-1)</u>
   <u>Create Speedbox in Win-Digipet</u>
   - Start Win-Digipet
   - Under File→ System settings you can manage your digital systems
   - Add the RZTec Speedbox at the next free position under Digital Systems
   - Select the correct port for the Speedbox under Com-Port
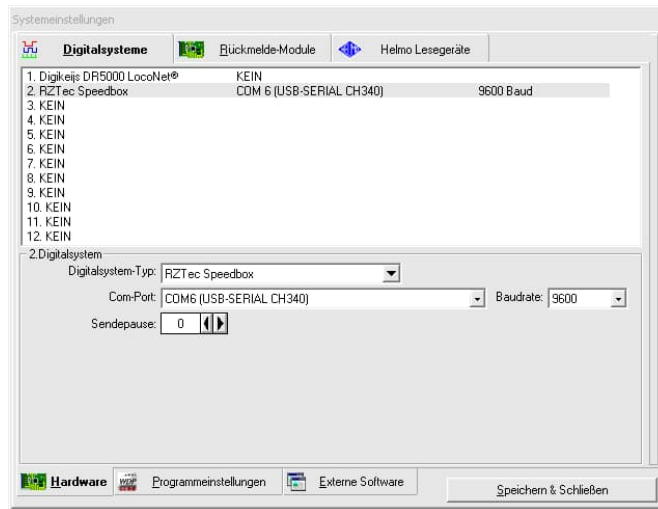
   - Save & close the system settings

<u>Calibrate locomotive with Speedbox in Win-Digipet</u>

   - Now click on Calibrate locomotives under Vehicles
   - Select the speedbox in the upper DropDown field
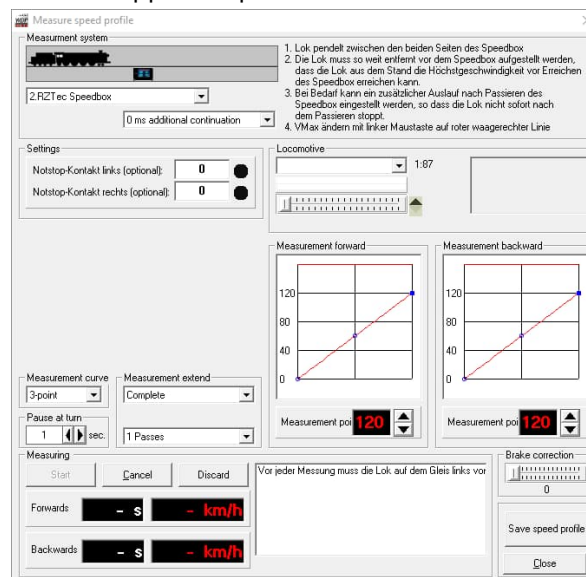
   - Make sure that the locomotive to be measured is facing forward in the direction of the speedbox.
   - Select the locomotive under Locomotive
   - Select a measuring method 3 or 15 point characteristic curve
   - Click Start and wait until the measurement process is completed
   - Click Save Speed Profile
   6.1. <u>Troubleshooting under Win-Digipet</u>

- Should the Speedbox not react under Win-Digipet once
- Disconnect the Speedbox from the USB for approx. 10 seconds and reconnect.
- Click in Win-Digipet on the number of the digital system under which you have created the speedbox.
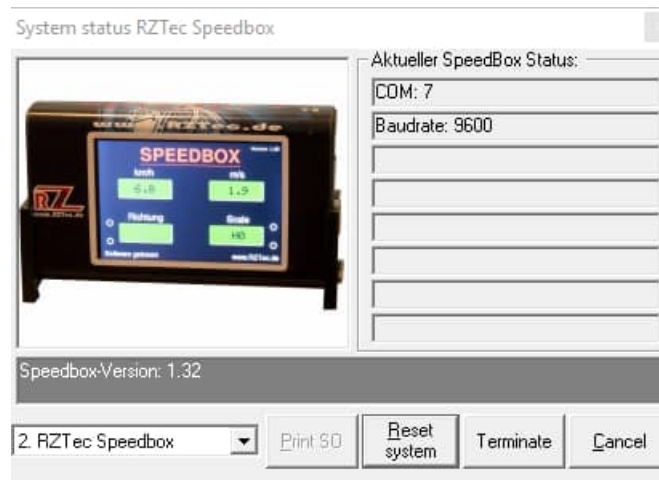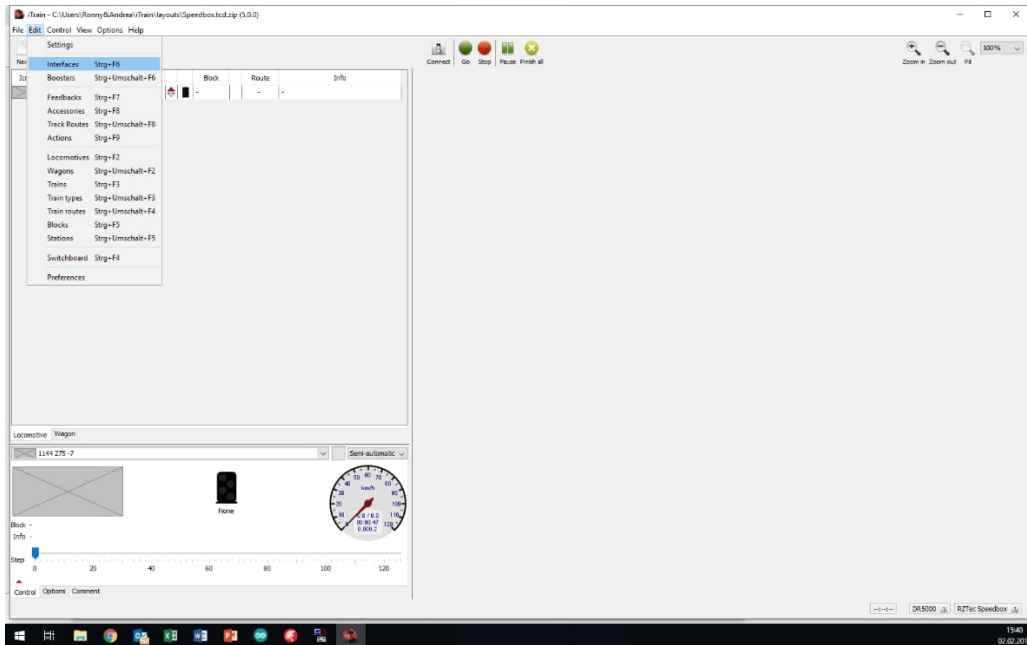

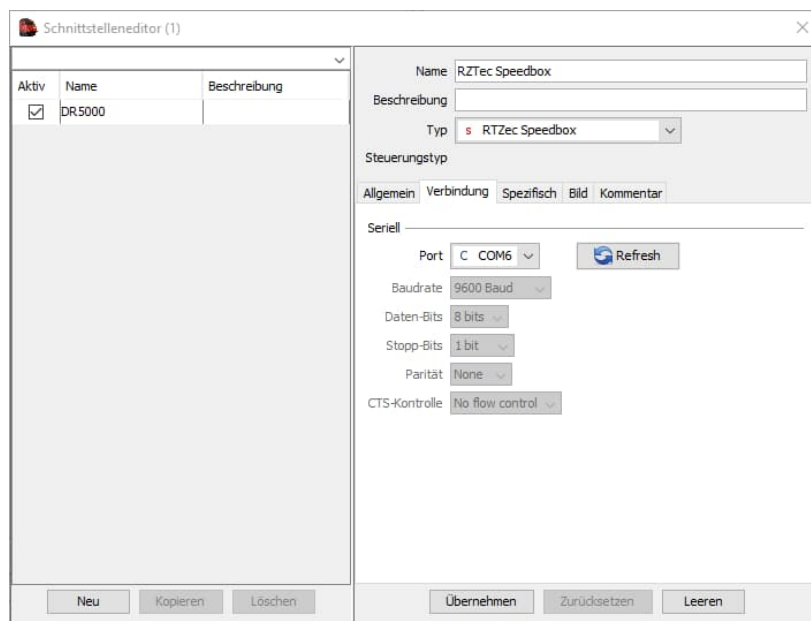- Click Reset System once, then the Speedbox is ready for use again

7. Calibration with iTrain (from version 5)

   Create speedbox in iTrain
- Connect your Speedbox to the PC or Mac
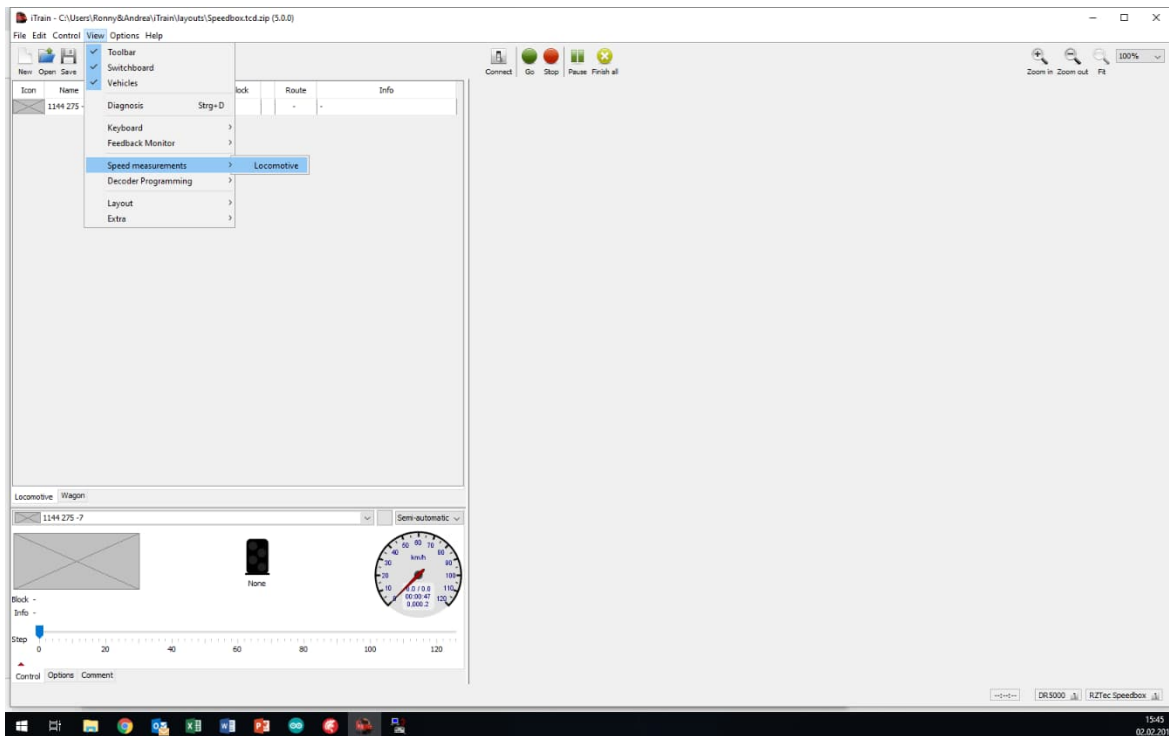- Open the preferences under Edit→ Interfaces

- Create a new interface and name it Speedbox
- Select the RZTec Speedbox under Type
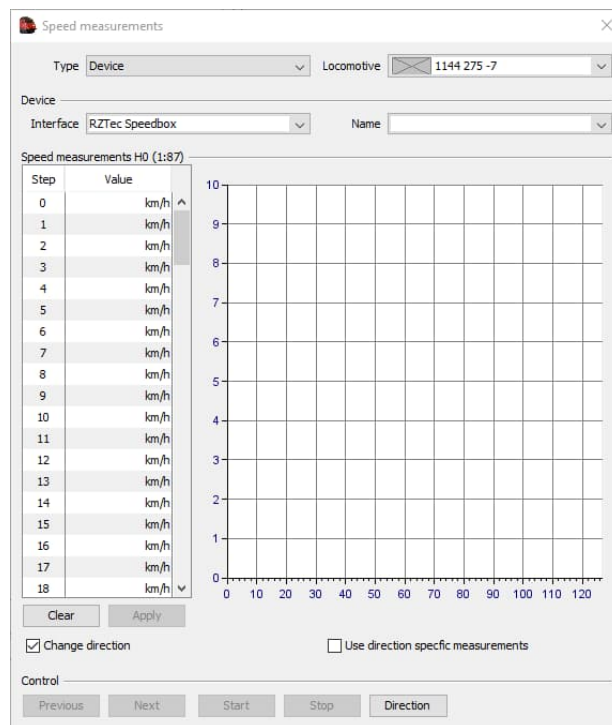- Select the correct port for the speedbox (see device manager)

- Finish the input with Apply

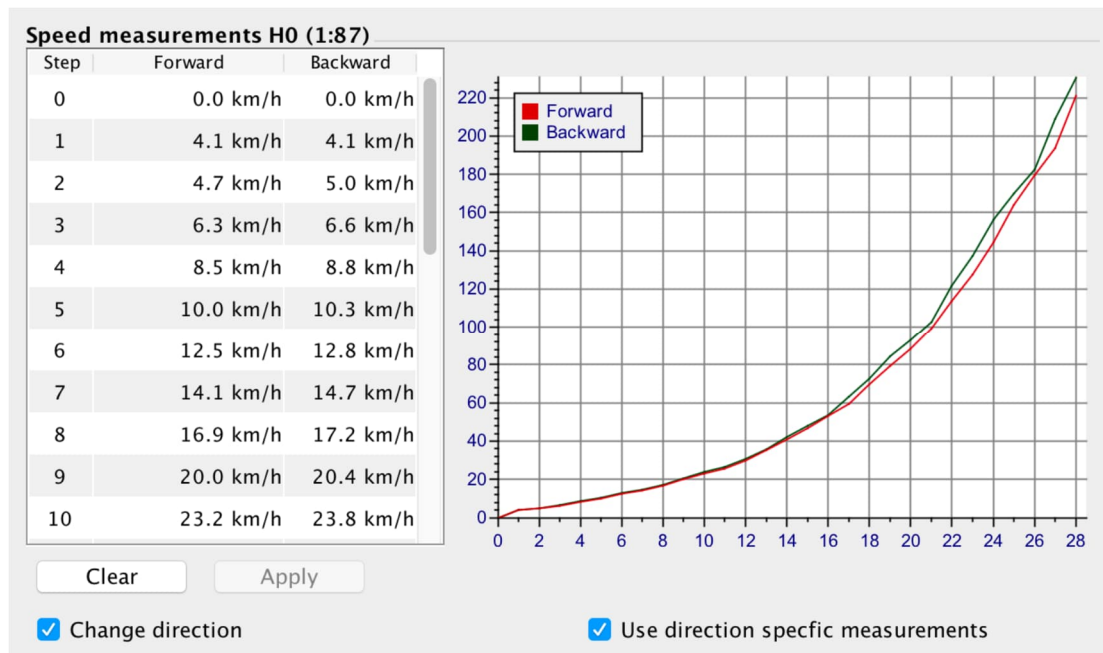## Calibrating a locomotive with the Speedbox in iTrain

- Click Connect
- Your control center and the speedbox should be in green status.

- Click on Display→ Speed measurements→ Locomotive
- There you select under type device
- Select the locomotive to be measured

- Select one, several or all speed levels
- When selecting, the order is important whether to measure in ascending or descending order.
- Check Change direction of travel if you are not measuring on a track oval.
- If you want to create a speed curve for forward and backward, check "Use direction-dependent measurements".

Speed measurements H0 (1:87)

Step	Forward	Backward
0	0.0 km/h	0.0 km/h
1	4.1 km/h	4.1 km/h
2	4.7 km/h	5.0 km/h
3	6.3 km/h	6.6 km/h
4	8.5 km/h	8.8 km/h
5	10.0 km/h	10.3 km/h
6	12.5 km/h	12.8 km/h
7	14.1 km/h	14.7 km/h
8	16.9 km/h	17.2 km/h
9	20.0 km/h	20.4 km/h
10	23.2 km/h	23.8 km/h

Clear   Apply

☑ Change direction   ☑ Use direction specfic measurements
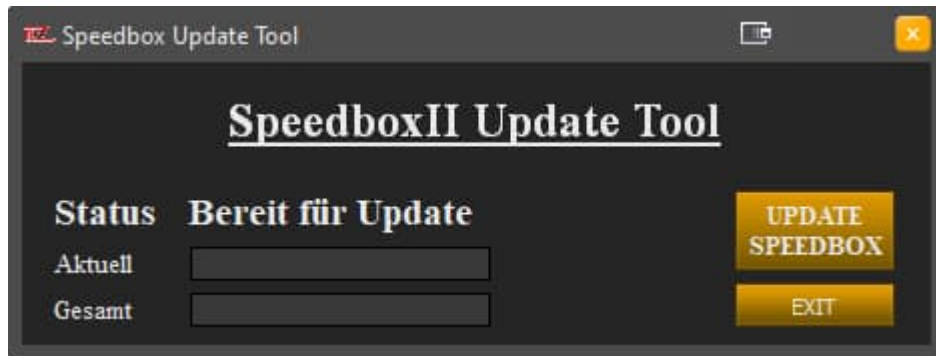
8. The update of the app

- If a newer version of the app is available, you will be offered the download when you start the app (prerequisite: automatic update check is turned on)
- If the automatic update check is switched off, an update can be retrieved via the info field
- By clicking Yes, the update will be downloaded via your browser
- Please unzip this and install as usual

9. The update of the speedbox
- If an update is available for your speedbox, this will be displayed when you connect to your speedbox (assuming automatic updates are enabled).
- If the automatic update check is switched off, a possible update can be requested via the info window when the Speedbox is connected.
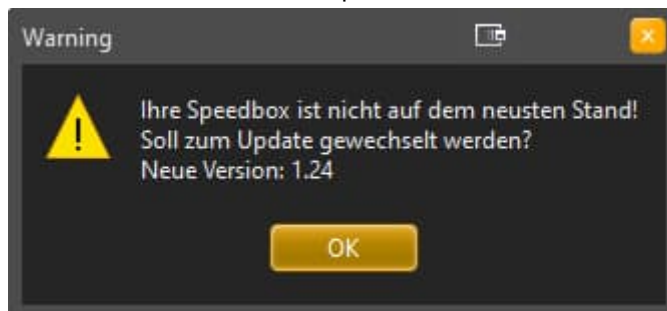
- With a click on OK the software changes into the update mode.
- From here on, do not disconnect the Speedbox from the computer until the update is complete.

- Click on "Update Speedbox" the update runs fully automatically

- After successful update and click OK the app closes
- Now disconnect the Speedbox from the PC for 10 seconds
- After reconnecting, restart the app and connect to your Speedbox as usual.

10. Double start of the app
- Multiple start of the app is possible
- This allows several speedboxes to be operated at once.
- However, we recommend this feature only to experienced users, as dealing with multiple Comports and evaluating the different displays can lead to confusion.

11. Troubleshooting

- An ideal measuring environment: Place the Speedbox as close as possible to the passing object to be measured, point the sensors more in the direction of the locomotive body, and not necessarily exactly at the buffers.
- Find out the ideal height of the speedbox by testing different heights
- Due to free-standing (open) bogies, faulty measurements may occur under certain circumstances. The remedy here is to fold a "hood" of white paper or cardboard and put it over the locomotive for the duration of the measurement process.

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