VI-DriveSim 20.1 Release Notes

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1 Release Notes

Welcome to the release notes of VI-DriveSim 20.1. The chapter contains information regarding new features, known issues and revision history.

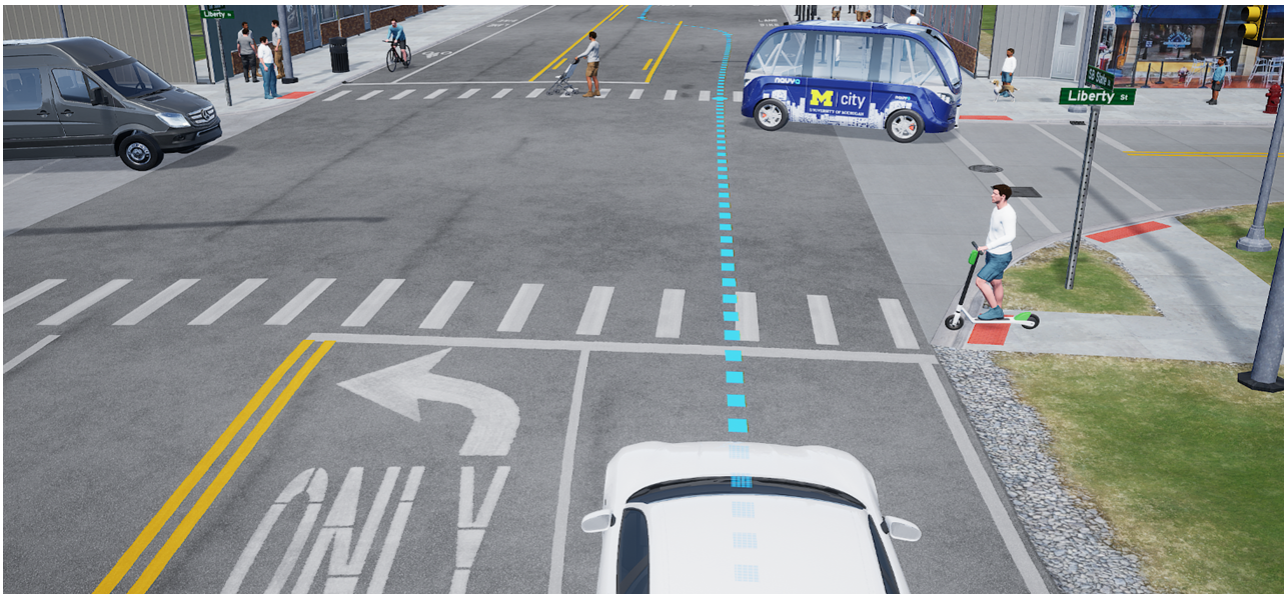
1.1 What's New

1.1.1 Release 20.1

The current VI-DriveSim release introduce interfaces to three new modules:

- VI-WorldSim
- VI-Dashboard
- VI-SimSound

Through **VI-WorldSim**, ADAS, traffic and sensor experiments are natively supported in the VI-DriveSim ecosystem.

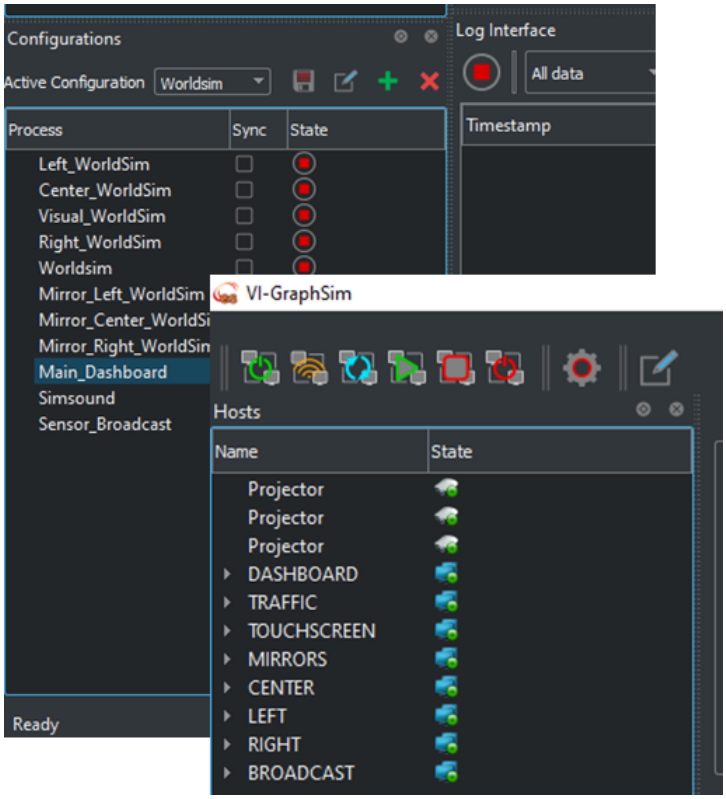


Based on the Qt for Automotive framework, **VI-Dashboard** expands VI-DriveSim for HMI applications allowing the creation of multiple interactive components, like instrumentation clusters or infotainment panels. Through VI-Dashboard, any VI-DriveSim signal can be easily mapped to any element in the HMI application.

VI-SimSound is now fully aligned to VI-DriveSim architecture:
- all the components required to operate VI-SimSound with VI-DriveSim are included in the main installer
- licenses are served by the same license server used by VI-DriveSim
- traffic car sounds, fed by VI-WorldSim states, are now available on top of the driver car ones

The **VI-Controller** application (formerly identified as VI-GraphSim controller) is now able to handle the entire driving simulator remote components simplifying common actions like:
- starting/stopping a module running on a remote node
- selecting the VI-WorldSim scenario, the VI-SimSound model or the VI-Dashboard layout.

Thanks to the multiple configurations capability introduced with v20.0, switching from a ride & handling experiment based on VI-GraphSim to an ADAS test based on VI-WorldSim is an extremely straight forward operation.



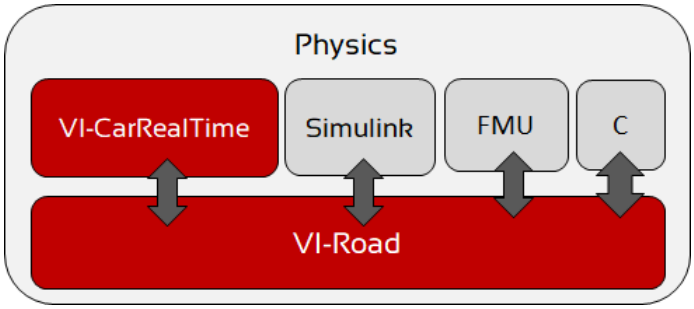
Notes:
- v20.1 does not require firmware update compared to v20.0
- it's mandatory to update VI-GraphSim and VI-Dashboard (Legacy) to release 20.1 for a proper interoperability of remote processes

Please refer to the revision history table for a summary of the addressed issues.

1.1.2 Release 20.0

Interface to 3rd Party Vehicle Models

- Expanded interface methods to enable:
  - FMU
  - Handwritten C code



- Expanded VI-Road API
  - Access to GridMesh model
  - Configure database resolution
  - Custom message device

- Expanded I/O protocol to cover:
  - o BassShaker module

Steering System

- New procedure for identifying steering assemblies electromechanical parameters:
  - o Friction
  - o Damping
  - o Inertia
  - o Cogging
  - o Eccentricity

- It works on ready-to-run simulator setup
  - o No need for additional sensors or measurements device
  - o Available to end users
  - o Identification results stored in dedicated property file for easy switch among different setups (like different steering wheels)

Steering Wheels for Desktop Simulator

- Expanded list of supported devices
  - o Logitech G29
  - o Logitech G920
  - o Fanatec CSW 2.5
  - o Fanatec Podium DD1 & DD2

- Consistent hardware support across platforms
  - o Windows
  - o Concurrent RedHawk
    - ▪ Force Feedback supported

BassShakers Control User Interface

- This VI-DriveSim release introduces a new UI tab dedicated to the control of the BassShakers component:
  - o easy access to activation and setup.
  - o the actuation logic is now embedded in the iodb_elab module so the usage of a Simulink model is no longer required, but still possible.
  - o supported also by VI-DriveSim for Windows.

rFpro interface

- New add on module to easily connect VI-DriveSim to rFpro graphic engine
  - o plug & play solution with no need for converting or mapping signals
  - o rFpro road HD surfaces available in VI-Road GridMesh format
  - o compatible with 3rd party physics connected to VI-DriveSim using the external vehicle protocol

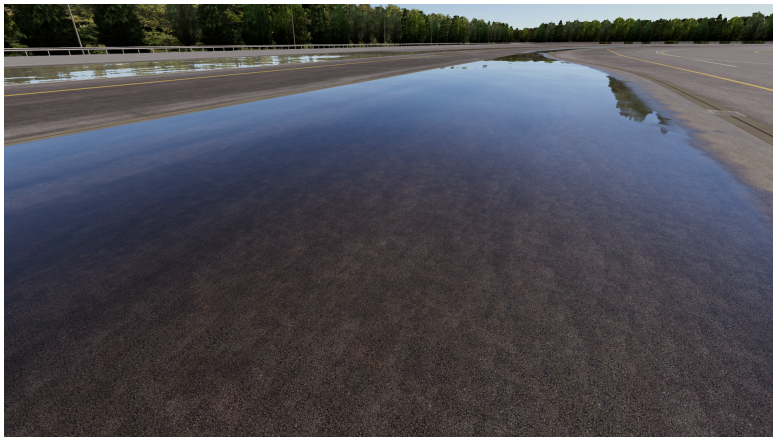
Miscellaneous

- VI-CarRealTime input signal activation can be linked to the environment file so the configuration is potentially session specific
- Support for SimWorkBench 2020.1

Please refer to the revision history table for a summary of the addressed issues.

1.1.3 What's New in VI-GraphSim

The onboard camera is not able to render wet surfaces when a track contains them:



1.2 Licenses

VI-DriveSim 20.1 requires the following set of license keys:

- `VI_DriveSim_DataExchange`
- `VI_DriveSim_IFace`

The following add-on modules requires a specific license key:

• VI-CarRealTime	please refer to VI-CarRealTime release notes document for keys required by this module
• VI-MotionCueing RealTime	`VI_DriveSim_MotionCueing_RealTime`
• VI-MotionCueing Offline	`VI_DriveSim_MotionCueing_Offline`
• VI-MotionCueing ActiveBelts	`VI_DriveSim_MotionCueing_ActiveBelts`
• VI-MotionCueing ActiveSeat	`VI_DriveSim_MotionCueing_ActiveSeat`
• VI-MotionCueing ActiveBrake	`VI_DriveSim_MotionCueing_ActiveBrake`
• VI-DriveSim WINTAX interface	`VI_DriveSim_WINTAX`
• VI-DriveSim SCANeR interface	`VI_DriveSim_SCANER`
• VI-DriveSim PODIUM interface	`VI_DriveSim_PODIUM`
• VI-DriveSim rFpro interface	`VI_DriveSim_rFpro`
• VI-Dashboard	`VI_DriveSim_Dashboard`
• VI-SimSound	`VI_NVHSim_Simsound`

Please make sure that you are running VI-grade Licensing version 20.0 or newer (based on LMX server version 4.9.20 or newer).
Please look at the VI-Licensing.pdf document for a detailed description of VI-grade's licensing system and how to setup a license server.

This product is patly based on incorporated software libraries. Please refer to the acknowledgments.pdf document, included in the product documentation for a listing of the adopted components and the respective licenses.

1.3 3rd Party Compatibility

This table shows the compatibility of the VI-grade suite products with the main 3rd party software.

	VI-CarRealTime	VI-BikeRealTime	VI-DriveSim	VI-Driver/VI-Rider for Matlab	VI-Driver for FMI
Matlab®	from 2015b to 2019b	from 2015b to 2019b	from 2015b to 2019b*	from 2015b to 2019b	
SimWorkBench®	2018.3 2020.1	2018.3 2020.1	2018.3 2020.1		
Veristand™ (***)	2015sp1	2015sp1			
dSPACE® RCP & HIL (**)	2018b 2019a 2019b	2018b		2018b	
ETAS LABCAR-OPERATOR IP®	5.4.8				
SCANeR®	1.8r33, 1.9r22		1.8r33, 1.9r22		
Prescan®	7.3				
Virtual Test Drive®	1.4				
SolidThinking Activate	2017.1				
Dymola®	2015				2015
CarSim™	2017.1				
CarMaker™	9.0				
TameTire	6.1		6.1		
CDTire	4.2.8		4.2.8		
RIDESuite	1.9/2.1		1.9/2.1		
FTire	2020.2		2020.2		

(*): please refer to SimulationWorkBench documentation for Matlab version compatible with MLToolkit module.
(**): the following combinations of dSPACE toolchain and SCALEXIO firmware are supported: 2018b with firmware 4.3.1, 2019a with firmware 4.4.1p3, 2019b with firmware 4.5.2.

3rd Party Software included in VI-grade products:

	VI-CarRealTime	VI-BikeRealTime	VI-DriveSim	VI-Driver/VI-Rider for Matlab	VI-Driver for FMI
MF-Tyre/MF-Swift	6.2.0.3 2020.1	6.2.0.3 2020.1	6.2.0.3 2020.1		

The following table shows the 3rd party compatibility for Adams-based VI-grade product:

	VI-Motorcycle	VI-Automotive	VI-Rail	VI-Aircraft	VI-CarRealTime Plug-In	VI-Driver
MSC Adams™	2020.0	2020.0	2019.2	2020.0	2018.0, 2019.0, 2020.0	2018.0, 2019.0, 2020.0
Matlab®	*	*	*	*		

(*): please refer to Adams documentation for compatibility version.
(***) The NI-PXI integration requires Visual C++ 2010 / SDK 7.1 to complete the building procedure successfully. Please refer to the NI-VeriStand documentation for more detail.

The VI-Licensing LMX supported version is **4.9.20** both for Server and for Client.

1.4 Platform Support

- Windows 10 x64
- Redhawk 7.x x64

1.5 Upgrade Procedure

In the next chapters, the upgrade procedure to each version of VI-DriveSim is described.

1.5.1 Release 20.1

Software Installation

VI-DriveSim 20.1 is compatible only with v20.1 of all the other VI-grade softwares. For this reason, it is mandatory to install as well:

- VI-GraphSim 20.1
- VI-Dashboard 20.1
  - VI-DashboardLegacy is a backup of the previous VI-Dashboard installation, still mandatory to be installed
  - VI-Dashboard 20.1 is the new version of VI-Dashboard, where the user can fully customize the dashboard shown on the screen. This requires a proper license.

These software should be installed on the machines where they were previously installed.

Then, to be able to manage VI-SimSound from the VI-Controller, it is needed to install VI-SimSound 20.1 on the sound machine. Previous version of VI-SimSound are still compatible, but it will not be possible to manage them from VI-Controller. Also in this case, a proper license is needed.

In case the upgrade is done from v20.0 to v20.1, there is no need of any firmware upgrade for the motor drives. Only the environment file and the RTDB need to be updated as described in the next chapters.

If the upgrade is performed from a version earlier than v20.0, please look at this chapter for the firmware, the environment file and the RTDB upgrade procedure.

Configuration File Update

The environment file is automatically updated after the first time the Save Config button is pressed. It is necessary then to close and reopen VI-DriveSim to be able to actually see the new fields available on the VI-DriveSim GUI, in the configuration tab.

RTDB Channels - Simulink models update

From the RTDB Tools of the VI-DriveSim GUI, it is needed to update the RTDB. This will add all the new RTDB channels that were not present in the previous version.

1.5.2 Release 20.0

Software Installation

VI-DriveSim 20.0 is compatible only with v20.0 of all the other VI-grade softwares. For this reason, it is mandatory to install as well:

- VI-GraphSim 20.0
- VI-Dashboard 20.0

on all the host machines used on the simulator.

Firmware Upgrade

In this chapter it is explained how to upgrade the firmware, both for Phase and Kollmorgen drives, compatible with VI-DriveSim 20.

Phase Firmware Upgrade Procedure

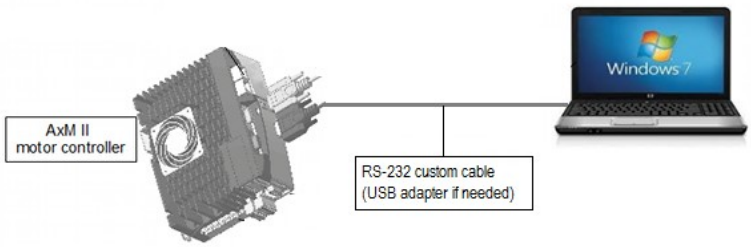
This chapter explains the procedure for upgrading the firmware of the Phase motor drives to the latest version.

Preliminary Operations:

1. Stop any running VI-DriveSim simulation;

2. Make sure that the PowerBox is switched on;

NOTE. The Windows PC from which the upgrade is performed must have an internet connection available for the download of the Phase Tools.



Phase Tools Installation:

1. Please download the free **Phase Tools V9.7.5** software version or newer from the official Phase website: http://www.phase.eu/phase-tools/

2. Launch the executable **PhaseToolsSetup.exe** from the folder where the software has been downloaded;

3. Follow the installation steps: proceed with the suggested installation steps; when a window with download requests appears please answer **Yes**; at the window with driver installation request please **enable the check box** in order to download and install the needed drivers;

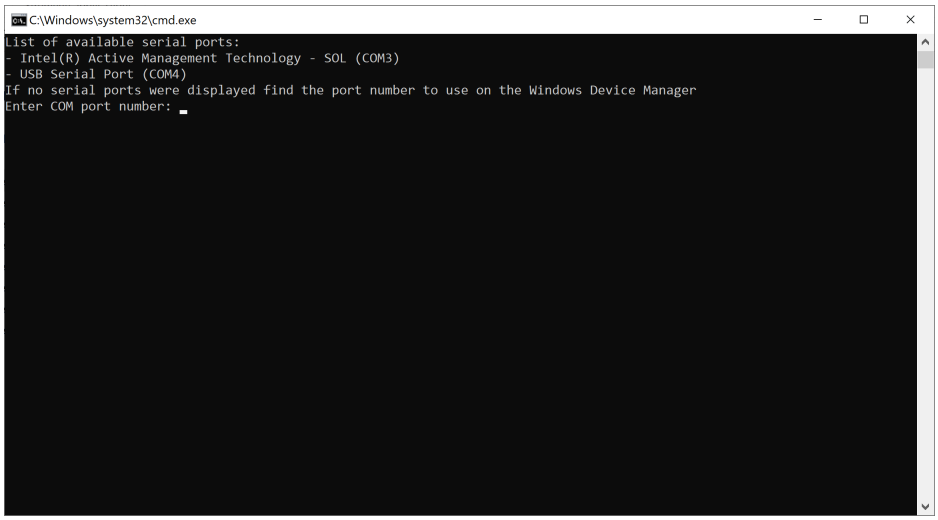
4. When the Phase Tools is successfully installed, please restart the Windows PC.

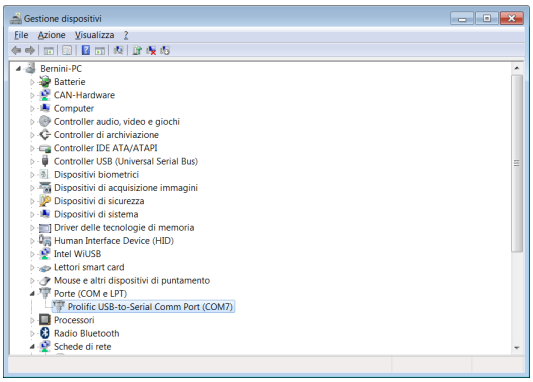
Steering Wheel firmware upgrade

The motor drive firmware is delivered by VI-grade as a compressed folder, named *VI_Steering_wheel_fw_phase_20.1_XXXX_Windows_x64_Setup.zip.*
Please unpack the archive into an empty temporary directory.

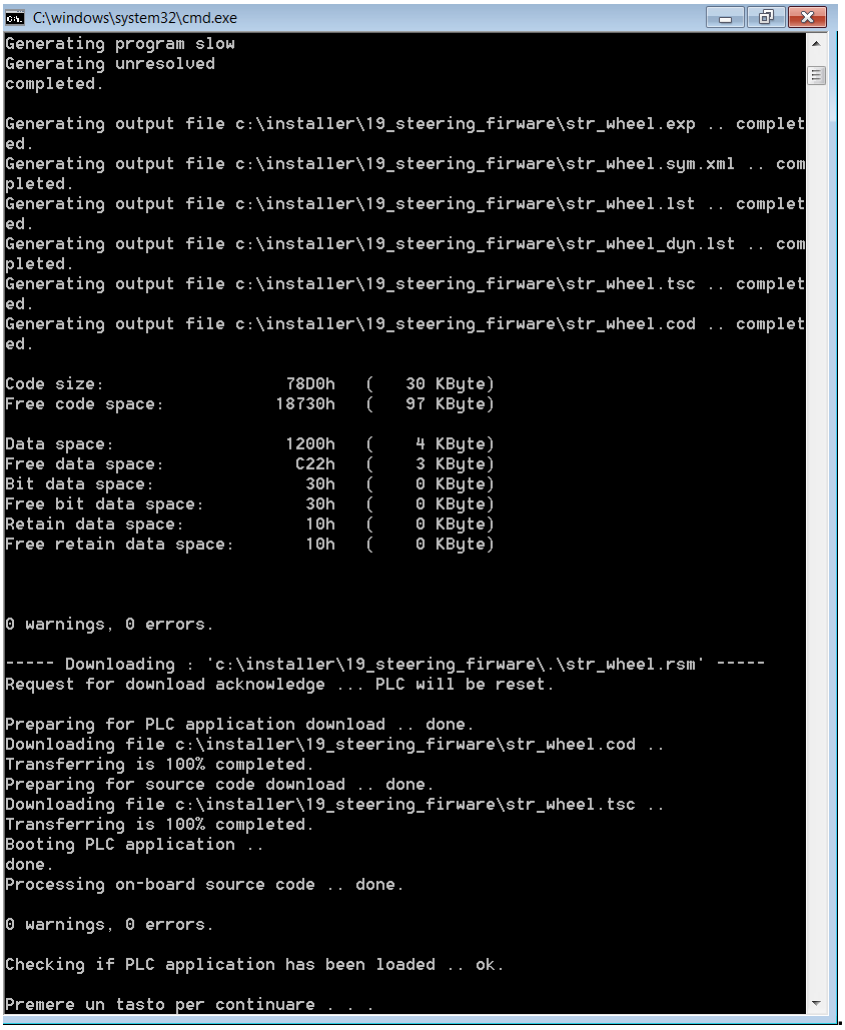
Now that you have the software and the files required for the upgrade, please do as follows:

1. Connect the windows pc to the steering wheel Motor Drive through the serial connection, using the USB adapter;
2. From the just created folder, run str_wheel.bat (double click on it) and insert the COM Port number when requested: a list of available COM port connected should be displayed on the command prompt, otherwise it is possible to identify the correct COM port from the device manager. Finally press Enter;





3. If the firmware has been uploaded to the Motor Drive with 0 Errors, the script has been run correctly and you can now press any key to close the prompt window. The update procedure is not completed yet. If the Drive you are updating is an AxM II Drive, some warnings/error are expected at the first attempt; the script in fact downloads by default the Firmware for AxN Drive, which is different from the one for AxM Drive. Just press enter, and the script will automatically download the correct Firmware to your Drive. Again, if the firmware has been uploaded to the Motor Drive with 0 Errors, the script has been run correctly and you can now press any key to close the prompt window.



For steering system driven by the Linux version of VI-DriveSim, another script needs to be run in order to update the mapping between the Concurrent Machine and the Motor Drive. Instead, for steering system driven by the Windows version of VI-DriveSim, the update procedure is completed.

On Linux, on the Concurrent Machine, inside the folder /`vigrade/vicrt/standalone/scripts` of the Concurrent Machine, the script `steering_wheel_phase` must be run to upload the pdo on the Electric Motor Drive

To do so, open a terminal in the folder /`vigrade/vicrt/standalone/scripts`, and run:

```
./steering_wheel_phase initial_setup
```

NOTE. If an error regarding permission is shown in the terminal, run the following command:

```
chmod +x steering_wheel_phase
```

NOTE. If you have more than one Motor Drive connected to the Concurrent Machine (as an example, if you also have the motor for the active brake connected), after running the terminal command a list of available motor drive is shown, from which you have to select the one relative to the Steering Wheel. In this way, the upload is done on the correct motor drive.

Active Brake

With the Active Brake it is not necessary to upgrade the firmware between version 19 and 20. However, if the firmware is not yet installed on the drive, the procedure is similar to the Steering Wheel firmware upgrade, and it is described in the next chapter.
Even, if a new Motor-Drive couple is connected (i.e. an installation from scratch, or if the motor is replaced with a new one), an additional calibration needs to be done after the firmware installation.

The firmware installation and the calibration are explained in the next chapters.

FIRMWARE UPGRADE

The procedure is the same as for the steering wheel drive, just with another package.

The motor drive firmware is delivered by VI-grade as a compressed folder, named *VI_Active_brake_fw_phase_20.1_XXXX_Windows_x64_Setup.zip.*
Please unpack the archive into an empty temporary directory.

Now that you have the software and the files required for the upgrade, please do as follows:
1. Connect the windows pc to the active brake Motor Drive through the serial connection, using the USB adapter;
2. From the just created folder, run brake.bat (double click on it) and insert the COM Port number when requested: a list of available COM port connected should be displayed on the command prompt, otherwise it is possible to identify the correct COM port from the device manager. Finally press Enter
3. If the firmware has been uploaded to the Motor Drive with 0 Errors, the script has been run correctly and you can now press any key to close the prompt window. The update procedure is not completed yet.

Another script needs to be run in order to update the mapping between the Concurrent Machine and the Motor Drive.

On Linux, on the Concurrent Machine, inside the folder /`vigrade/vicrt/standalone/scripts` of the Concurrent Machine, the script `active_brake_phase` must be run to upload the pdo on the Electric Motor Drive.
To do so, open a terminal in the folder /`vigrade/vicrt/standalone/scripts`, and run:

```
./active_brake_phase upload_pdo
```

NOTE. If an error regarding permission is shown in the terminal, run the following command:

```
chmod +x active_brake_phase
```

NOTE. If you have more than one Motor Drive connected to the Concurrent Machine (as an example, if you also have the motor for the steering wheel connected), after running the terminal command a list of available motor drive is shown, from which you have to select the one relative to the Steering Wheel. In this way, the upload is done on the correct motor drive.

CALIBRATION

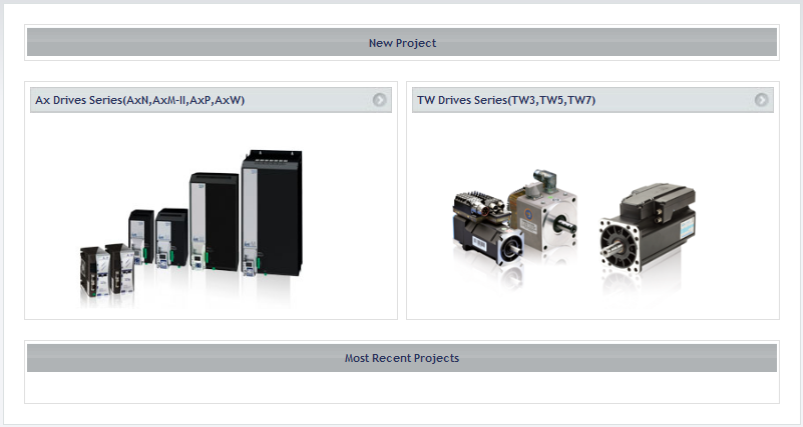
This calibration must be done after the firmware has been installed on the motor drive. Please note that these steps need to be done only for a completely new installation, or if the motor or the drive are replaced.

There is no need to do this calibration every time the firmware is upgraded.

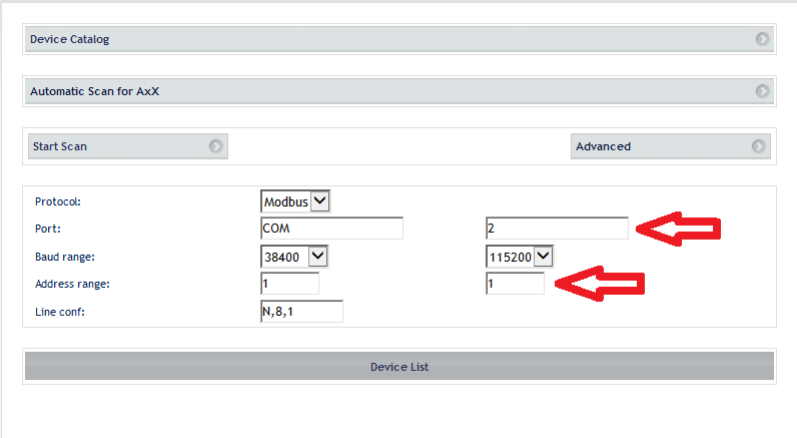
Here are the steps that need to be done:

1. Connect the PC to the active brake drive through the serial/USB cable adapter or through the Moxa NPort5150A serial over ethernet adapter.
   a. Serial/USB cable: check for COM port number from Windows device manager interface
   b. NPort5150A adapter: check for COM port number in the Moxa utility
2. Open Cockpit 3 software (i.e. from Desktop icon “Cockpit”)

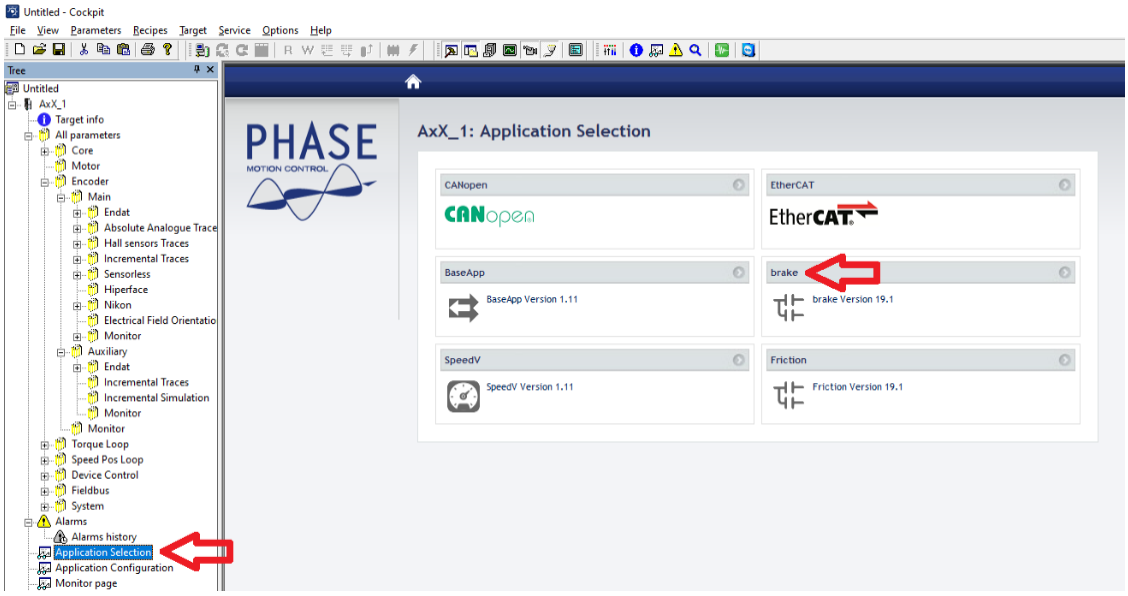
3. Select “Ax Drives Series (AxN, AxM-II, AxP, AxW)”



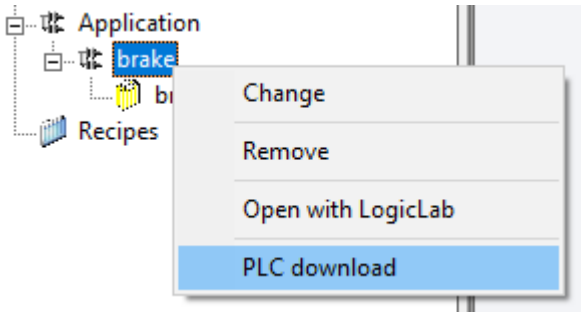
4. Select “Automatic scan for AxX”
5. Open “Advanced” option
6. In “Port” insert the number of your COM port and in “Address range” select for both “1”



7. Select “Start Scan”
8. Select the Drive (press OK to read all parameters when requested)
9. Select “tree view” by pressing the icon 
10. Open “Target info” and check the firmware version (should be 1.12.xxx)
11. Go to “Application selection” and select “brake”



12. Right click on “brake” and select “PLC download”



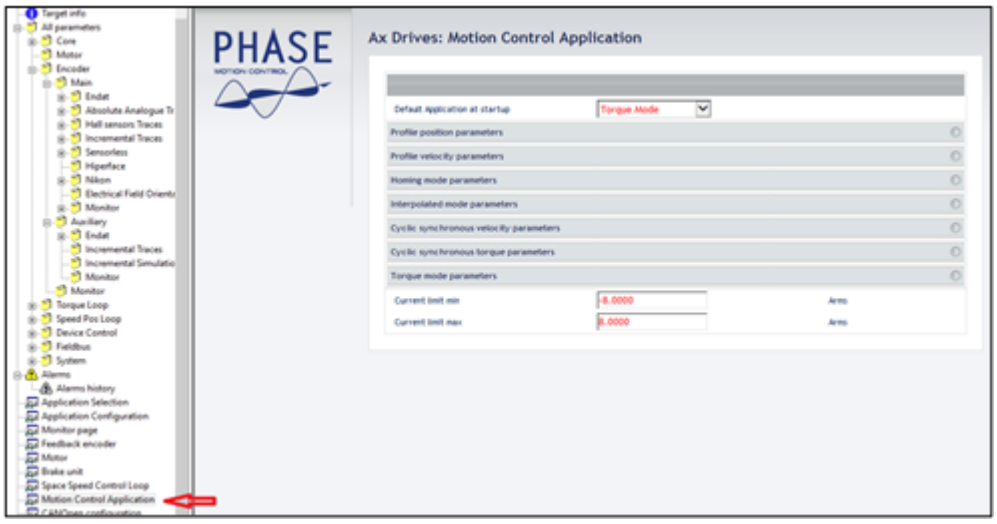
13. The software will ask to download the PLC Project, select “OK”
14. Wait a few seconds for PLC download operation
15. When the download is complete, reconnect to the drive ( )
16. Read all parameters
17. Go to “Fieldbus” -> “Serial link” and in the first line select “ModBus” (Default is “JBus”) and press Enter to apply the change. Click on “Write page” ( ), save parameters into target ( ) and then reset drive ( ).

18. Go to “Fieldbus” -> “EtherCAT” and select “Enable EtherCAT module”: “True” (default is “False”) and press Enter to apply the change. Click on “Write page” ( ), save parameters into target ( ) and then on reset drive ( ).

19. Go to “Core” -> “parSysCoreSpeed” select “125MHz” (default is “80MHz”) and press Enter to apply the change. Click on “Write page” ( ), save parameters into target ( ) and reset drive ( ).
20. Go to “Motor” and set:
    c. Motor Stator Resistance: 7 Ohm (typical motor value)
    d. Motor Stator Inductance: 35 mH (typical motor value)
    e. Motor KT: Check the installed motor number (motor plate)
21. Write page ( ), save parameters into target ( ) and reset drive ( ).
22. Go to “System”-> Thermal model:
    a. parThermalModel.CoolingTempOn: 45 °C
    b. parThermalModel.CoolingTempOff: 40 °C
    c. parThermalModel.MotorOverTemp: 85 °C

28104	parThermalModel.CoolingTempOn	REAL	45.0	°C	50.0	Start cooling at
28105	parThermalModel.CoolingTempOff	REAL	40.0	°C	45.0	Stop cooling at
28106	parThermalModel.MotorOverTemp	REAL	85.0	°C	150.0	Motor Temperature limit

23. Write page (), save parameters into target () and reset drive ().
24. Go to “Motion Control Application” and switch to “Torque Mode” .
25. Under “Torque mode parameters“ insert:
    a. Current limit min: -8.0000
    b. Current limit max: 8.0000



26. Write page (), save parameters into target () and reset drive ().
27. Go to “Torque loop” and set:
    a. ParlLoop.ILoopKi: 16
    b. ParlLoop.ILoopKp: 16?000
    c. ParPStage_DisablePOST: True
    d. ParPStage_ForcePOST: True

27407	parlLoop.ILoopKi	REAL	16.0	--	0.00	Modulator Ki
27408	parlLoop.ILoopKp	REAL	1.60e+4	--	0.00	Modulator Kp
27506	parPStage_DisablePOST	BOOL	True	--	False	Disable power stage self-test at startup
27507	parPStage_ForcePOST	BOOL	True	--	False	Force successfully completion of power stage self-test at startup

28. Write page (), save parameters into target () and reset drive ().
29. Go to “Application” -> “brake” -> “brake”
30. Toggle ON (activate) the “Auto refresh mode” (Parameters->Auto refresh mode): for next steps the inserted value can be confirmed pressing “Enter”, in other words with “Auto refresh mode” option enabled the “Write page” operation can be avoided. If the drive was already configured with an “Active Brake PLC Software” please be sure to set:
    a. angle_min: 0
    b. angle_max: 0
    c. pressure_offset_usr: 0

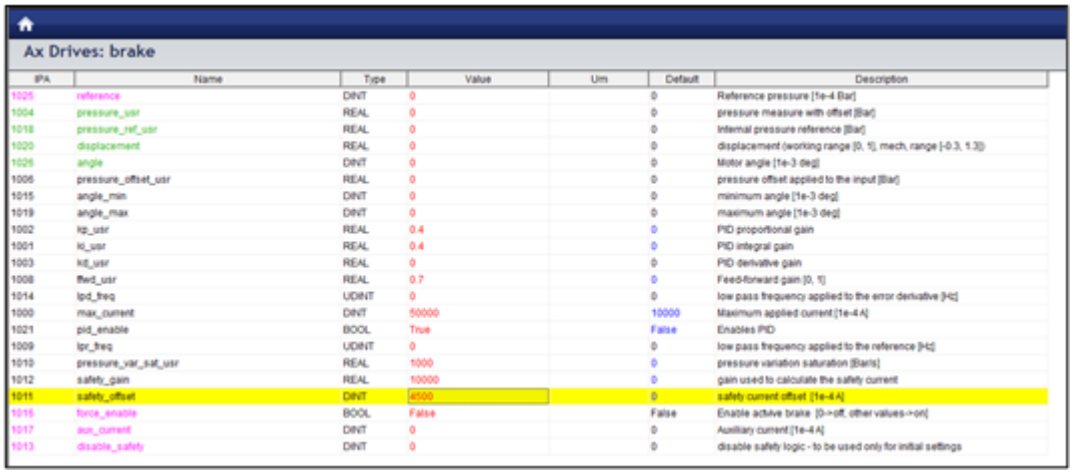
Before starting the calibration, to confirm:

    a. Write page (), save parameters into target () and reset drive ().

31. Active brake calibration:
    a. disable_safety: 1
    b. pid_enable: False
    c. force_enable: True
    d. aux_current: 5000

e. The motor will reach the mechanical travel limit
f. Sign the angle value
g. aux_current: -5000
h. The motor rotates on the opposite side reaching the opposite travel limit
i. Sign the angle value
j. Enter the highest value in "angle_max" and the lowest value in "angle_min"
k. force_enable: False
l. disable_safety: 0
m. Write page (), save parameters into target () and reset drive ().

32. Once calibration has completed default values must be inserted:
    a. Kp_usr: 0.4
    b. Ki_usr: 0.4
    c. Kd_usr: 0
    d. ffwd_usr: 0.7
    e. lpd_freq: 0
    f. max_current: 50000
    g. pid_enable: True
    h. lpr_freq: 0
    i. pressure_var_sat_usr: 1000
    j. safety_gain: 100000
    k. safety_offset: 4500
    l. pressure_offset_usr: insert the value of the “pressure_usr” parameter
    m. Write page (), save parameters into target () and reset drive ().
    n. Now the “pressure_usr” value should be around 0.00
33. Write page (), save parameters into target () and reset drive ().



The Active Brake calibration is now completed.

Active Belts firmware upgrade

For Active Belts driven by an electric motor, the Drive for this motor need also to be updated: the procedure is the same described for the Steering Wheel firmware upgrade, using the same script.

Before updating the firmware, make sure that the correct motor drive is connected to the Windows PC.

After the firmware update, also the pdo needs to be updated, using the command

```
./steering_wheel_phase initial_setup
```

from the Concurrent machine.

Kollmorgen Firmware Upgrade Procedure

Steering Wheel firmware upgrade

This paragraph explains the procedure to upgrade the firmware of the Kollmorgen motor drives to the latest version.

Preliminary Operations

1. Stop any running VI-DriveSim simulation;

2. Make sure that the PowerBox is switched on;

3. Verify the drive respond on network. The default addresses for the steering wheel drive is **192.168.222.170**

If problems occur, the actual drive IP configuration is done by setting the rotary switch RS1 to position 1 and then by setting the IP address via the web interface. The IP address can be checked by pushing the button B3 followed by the button B2. If the IP address shown on the upper right display of the driver (one number at time) is different than the one listed above, setup a point to point ethernet connection and change the IP address on the web interface. For example, assume that the address is 192.168.0.100.
The steps to follow are:

- setup the ethernet connection of the computer used for configuration such that the drive can be accessed
- with a web browser go to the address 192.168.0.100
- login as administrator using the password “administrator”
- select the tab “Settings” and the “Network”
- set the correct IP, subnet mask (255.255.255.0) and gateway (192.168.222.1)
- press “Apply” and then “Reboot”
- setup the ethernet connection of the computer used for configuration to access the subnet 192.168.222.XXX

Firmware Package

The motor drive firmware is delivered by VI-grade as a compressed folder, named *VI_Steering_wheel_fw_20.1_XXXX_Windows_x64_Setup.zip*

Upgrade

The procedure to update the drive PLC software is the following:

- take a SD card and make sure it is empty
- unzip the “backup” folder from the specific archive and copy it to the SD card
- insert the SD card in the drive
- connect to the web interface of the drive (with a browser go to 192.168.222.170)
- login as administrator (password “administrator”)
- select the tab “**KAS Application**” and stop the application by pressing “**Stop**”
- select the tab “**Backup & Restore**” and then “**Restore**”
- press on “**Restore Controller**”
- press on “**OK**” when asked to reboot
- after reboot, login with the same credentials and return to the “**Restore**” menu
- click on “**Advanced**” under “**EtherCAT Devices**”
- select the only available controller “0: AKD …”
- press on “**Restore selected devices**”
- after reboot, login again and go to the tab “**KAS Application**” and check that “**Status of KAS app**” is “**_started**”. If not, start the application
- make sure that the option “Auto-start” is checked. If not check it and press “Apply”

After the procedure is complete the “Version of the KAS app” under KAS Application tab should be:

- str_wheel:VERS. 2:xxx

The angle offset of the steering wheel (zero position) should be set using the Set Zero Angle button in the DriveSim GUI (see this chapter).

Active Brake firmware upgrade

This paragraph explains the procedure to upgrade the firmware of the Kollmorgen motor drives to the latest version.

Preliminary Operations

1. Stop anyrunning VI-DriveSim simulation;

2. Make sure that the PowerBox is switched on;

3. Verify the drive respond on network. The default addresses for the Active Brake drive is **192.168.222.171**

If problems occur, the actual drive IP configuration is done by setting the rotary switch RS1 to position 1 and then by setting the IP address via the web interface. The IP address can be checked by pushing the button B3 followed by the button B2. If the IP address shown on the upper right display of the driver (one number at time) is different than the one listed above, setup a point to point ethernet connection and change the IP address on the web interface. For example, assume that the address is 192.168.0.100.
The steps to follow are:

- setup the ethernet connection of the computer used for configuration such that the drive can be accessed
- with a web browser go to the address 192.168.0.100
- login as administrator using the password “administrator”
- select the tab “Settings” and the “Network”
- set the correct IP, subnet mask (255.255.255.0) and gateway (192.168.222.1)
- press “Apply” and then “Reboot”
- setup the ethernet connection of the computer used for configuration to access the subnet 192.168.222.XXX

Firmware Package

The motor drive firmware is delivered by VI-grade as a compressed folder, named *VI_Active_brake_fw_kollmorgen_20.1_XXXX_Windows_x64_Setup.zip*

Upgrade

The procedure to update the drive PLC software is the same for both the steering wheel and active brake drives.

- take a SD card and make sure it is empty
- unzip the “backup” folder from the specific archive and copy it to the SD card
- insert the SD card in the drive
- connect to the web interface of the drive (with a browser go to 192.168.222.171)
- login as administrator (password “administrator”)
- select the tab “**KAS Application**” and stop the application by pressing “**Stop**”
- select the tab “**Backup & Restore**” and then “**Restore**”
- press on “**Restore Controller**”
- press on “**OK**” when asked to reboot
- after reboot, login with the same credentials and return to the “**Restore**” menu
- click on “**Advanced**” under “**EtherCAT Devices**”
- select the only available controller “0: AKD …”
- press on “**Restore selected devices**”
- after reboot, login again and go to the tab “**KAS Application**” and check that “**Status of KAS app**” is “**_started**”. If not, start the application
- make sure that the option “Auto-start” is checked. If not check it and press “Apply”

After the procedure is complete the “Version of the KAS app” under KAS Application tab should be:

- _brake:VERS. 2:xxx for the active brake

Drive Configuration

To initialize the drive configuration, open a terminal on the Concurrent and go to the folder
`/vigrade/vicrt/standalone/scripts`

run the following command to initialize the active brake:
`./active_brake_kollmorgen initialize`

The configuration process for the active brake is fully automatic.

Configuration File Update

VI-DriveSim 20 provides a script to update the vidrvsim_conf file is provided; new parameters need to be set in the environment file for the iodb_elab, and a json file is created, as it is necessary for the correct functioning of the steering system. The json file is then saved in `/vigrade/vicrt/standalone/`.

The script is delivered by VI-grade, and can be found in `/vigrade/vicrt/standalone/scripts/` folder, on the Concurrent machine.

To run it, open a terminal in that folder, and run

```
./vidrivesim_conf_update input_file output_file
```

where:
input_file is the vidrivesim_conf of the version previously installed. Full path is required in case the input file is not in the same folder of the script (i.e /usr/local/ccursim/projects/ENV/vidrivesim_conf).
output_file is the vidrivesim_conf that will be created, compatible with VI-DriveSim 20. Full path is required in order to save the output file in a specific path.

If a permission error comes up, run:

```
chmod +x vidrivesim_conf_update
```

and then run again the previous command.

Make sure that the latest vidrivesim_conf.distrib (relative to VI-DriveSim 20)is installed in the `/usr/local/ccursim/projects/ENV/`

After pressing enter, some settings need to be specified in order to properly configure the final file. The script itself will guide you during the process.

During the update, you will also be asked if you wants to start a procedure to create the json file. It is suggested to do so, otherwise the json must be created manually. After pressing **Yes**, some questions related to the steering wheel assembly are asked. In particular:

- `Enter the name of the JSON file to be used (it will be saved in /vigrade/vicrt/standalone)`

Type the name of the json file you want to save in the standalone folder, with no file extension (as an example you can type: **swid**). This file will be called later in the output file

- `Is the steering wheel motor connected directly (answer no if a belt transmission is used)? ([yes]/no)`

Type yes/no, depending on whether the motor is mounted directly to the steering wheel ([yes]) or through a belt/pulley transmission ([no]). Default value is [no].

- `Is the steering wheel motor equipped with a single turn encoder? (yes/[no])`

Unless it is a very old motor, the answer should be [no], which is also the default answer if you press Enter. Make sure, it is possible to check on the motor itself in the Feedback Sensor field, written on the plate on the side of the motor. If the code begins with C, then the answer to this question is Yes.

At the end of this procedure, the json file is created and saved in the standalone folder.

At the end of the Upgrade Procedure, a new RTDB must be created to be able to drive again on the Simulator; in fact, new channels have been added, and the new VI-CarRealTime solver will need the latest RTDB. To mantain a backup of the previous files, it is suggested to create a new Project in SimWB, and then a new RTDB/Test etc. To create a new Project, please refer to the corresponding chapter.

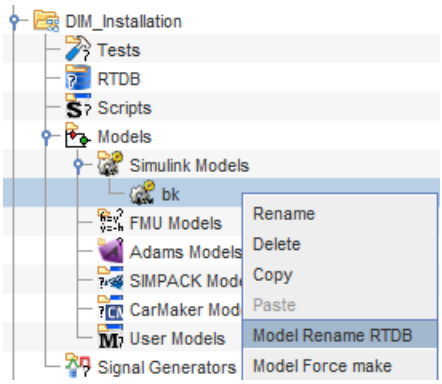
RTDB Channels - Simulink models update

Release 20.0

When upgrading to v20, it is recommended to create new Projects, RTDBs and Tests on SimWorkBench, so that a new clean project can be used with the new version of VI-DriveSim.
If the RTDB is updated from a previous version, and not created from scratch, all the redundant channels of the old RTDB will remain after the update.

Then, any Simulink model used with a previous version of VI-DriveSim or SimWorkBench must be recompiled on the new RTDB.

In case only VI-DriveSim is updated, each Simulink model must be recompiled on the new RTDB, to avoid any malfunctioning; this can be done by recompiling from scratch the simulink model or by right clicking on the Simulink model in the tree view of SimWB, and then selecting Model Rename RTDB. The new RTDB name should then be written in the pop-up window, and the Simulink will be recompiled automatically at the simulation startup.



If the Simulink model is still not working properly, a complete recompilation from the Windows machine is suggested.

If also SimWorkBench has been updated to a newer version, the new MLToolkit should be installed on the windows machine used to compile the Simulink model, and then the Simulink must be recompiled.

Release 19.0

From VI-DriveSim 19 on, some RTDB Channels have been removed or have been renamed with a more consistent naming structure. For this reason, if a Simulink model uses one of these channels, the Simulink model needs to be modified and the new channel must be used for everything to work properly.
This is the case with HWMap's Simulink models, for example, because the channels for steering torque and steering angle have been renamed.

Below there is a list with all the Output Channels and all the Input Channels that have been removed/renamed in VI-DriveSim 20. Please check if any of these channels are in the Simulink models used on your simulator, and update the Simulink model accordingly.

OUTPUT CHANNELS

```
'VI_DriveSim.Outputs.RefID'
  -->    'REMOVED'
```

STEERING WHEEL

```
'VI_DriveSim.Outputs.Cockpit.Steer.TORQUE'
  -->    'VI_DriveSim.Outputs.Cockpit.SteeringWheel.Torque'
'VI_DriveSim.Outputs.Cockpit.Steer.TORQUE_MULT'
  -->    'VI_DriveSim.Outputs.Cockpit.SteeringWheel.TorqueMultiplier'
```

PHIDGETS

```
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG1'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG2'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG3'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG4'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG5'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG6'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG7'
  -->    'REMOVED'
'VI_DriveSim.Outputs.Cockpit.Phidgets.DIG8'
  -->    'REMOVED'
```

ACTIVE BELTS

```
'VI_DriveSim.Outputs.ECAT.PHASE.SPEED_MULT'
  -->    'REMOVED'
'VI_DriveSim.Outputs.ECAT.PHASE.ACC_MULT'
  -->    'REMOVED'
'VI_DriveSim.Outputs.ECAT.PHASE.FRICTION'
  -->    'REMOVED'
'VI_DriveSim.Outputs.ECAT.PHASE.BELT_ACC_SCALE'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveBelts.AccScale'
'VI_DriveSim.Outputs.ECAT.PHASE.BELT_ZERO_PULL'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveBelts.ZeroPull'
'VI_DriveSim.Outputs.ECAT.PHASE.BELT_MIN_PULL'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveBelts.MinPull'
'VI_DriveSim.Outputs.ECAT.PHASE.BELT_LP_FREQ'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveBelts.LPFreq'
'VI_DriveSim.Outputs.ECAT.PHASE.BELT_ENABLE'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveBelts.Enable'
'VI_DriveSim.Outputs.ECAT.PHASE.BELT_PULLEY_RADIUS'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveBelts.PulleyRadius'
```

ACTIVE SEAT

```
'VI_DriveSim.Outputs.Active_Seat.GLOBAL_GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.GlobalGain'
'VI_DriveSim.Outputs.Active_Seat.Inf.GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Vert.Gain'
'VI_DriveSim.Outputs.Active_Seat.Inf.NL_GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Vert.NLGain'
'VI_DriveSim.Outputs.Active_Seat.Inf.PRELOAD'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Vert.Preload'
'VI_DriveSim.Outputs.Active_Seat.Inf.ASIMMETRY_GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Vert.AsymmetryGain'
'VI_DriveSim.Outputs.Active_Seat.Lower_Lat.GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.LowerLat.Gain'
'VI_DriveSim.Outputs.Active_Seat.Lower_Lat.NL_GAIN'
```

```
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.LowerLat.NLGain'
'VI_DriveSim.Outputs.Active_Seat.Lower_Lat.PRELOAD'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.LowerLat.Preaload'
'VI_DriveSim.Outputs.Active_Seat.Upper_Lat.GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.UpperLat.Gain'
'VI_DriveSim.Outputs.Active_Seat.Upper_Lat.NL_GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.UpperLat.NLGain'
'VI_DriveSim.Outputs.Active_Seat.Upper_Lat.PRELOAD'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.UpperLat.Preload'
'VI_DriveSim.Outputs.Active_Seat.Rear.GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Rear.Gain'
'VI_DriveSim.Outputs.Active_Seat.Rear.NL_GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Rear.NLGain'
'VI_DriveSim.Outputs.Active_Seat.Rear.PRELOAD'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Rear.Preload'
'VI_DriveSim.Outputs.Active_Seat.Rear.ASIMMETRY_GAIN'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Rear.AsymmetryGain'
'VI_DriveSim.Outputs.Active_Seat.ENABLE'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Enable'
'VI_DriveSim.Outputs.Active_Seat.Filters.LONG_LP'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Filters.LongLp'
'VI_DriveSim.Outputs.Active_Seat.Filters.LAT_LP'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Filters.LatLp'
'VI_DriveSim.Outputs.Active_Seat.Filters.VERT_LP'
  -->    'VI_DriveSim.Outputs.Cockpit.ActiveSeat.Filters.VertLp'
```

INPUT CHANNELS

PHIDGETS

```
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG1'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG2'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG3'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG4'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG5'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG6'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG7'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.DIG8'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG1'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG2'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG3'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG4'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG5'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG6'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG7'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.Phidgets.ANALOG8'
  -->    'REMOVED'
```

SLIPRO

```
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN1'
  -->    'REMOVED'
```

```
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN2'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN3'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN4'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN5'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN6'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN7'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN8'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN9'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN10'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN11'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN12'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN13'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN14'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN15'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.BTN16'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.ROT1'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.ROT2'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Cockpit.SLIPRO.CLUTCH'
  -->    'REMOVED'
```

LOGITECH STEERING

```
'VI_DriveSim.Inputs.Cockpit.LOGITECH.STEER_BTNR'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.SteeringWheelBtnR'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.STEER_BTNL'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.SteeringWheelBtnL'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.STEER_PADDLEL'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.SteeringWheelPaddleL'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.STEER_PADDLER'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.SteeringWheelPaddleR'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.STEER_ANGLE'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.SteeringWheelAngle'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.THROTTLE'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.Throttle'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.BRAKE'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.Brake'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.CLUTCH'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.Clutch'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.AUTOSHIFT_UP'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.AutoshiftUp'
'VI_DriveSim.Inputs.Cockpit.LOGITECH.AUTOSHIFT_DOWN'
  -->    'VI_DriveSim.Inputs.Usb.Logitech.AutoshiftDown'
```

MATLAB

```
'VI_DriveSim.Inputs.Matlab.SWA_MULT'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Matlab.PHASEEFFECTS_MULT'
  -->    'REMOVED'
'VI_DriveSim.Inputs.Matlab.VELOCITYMULT'
```

```
  -->    'REMOVED'
```

ECAT

```
'VI_DriveSim.Inputs.ECAT.PHASE.AxX1.Status'
  -->    'VI_DriveSim.Inputs.ECAT.SteeringWheel.DriveStatus'
'VI_DriveSim.Inputs.ECAT.PHASE.AxX2.Status'
  -->    'VI_DriveSim.Inputs.ECAT.ElectricBelts.DriveStatus'
'VI_DriveSim.Inputs.ECAT.PHASE.SWA'
  -->    'VI_DriveSim.Inputs.ECAT.SteeringWheel.Angle'
'VI_DriveSim.Inputs.ECAT.PHASE.SWVEL'
  -->    'REMOVED'
'VI_DriveSim.Inputs.ECAT.PHASE.SWACC'
  -->    'REMOVED'
```

1.6 Changed Behaviour

1.6.1 Release 20.1

No changes in behavior to report in this release.

1.6.2 Release 20.0

Steering Wheel Drive Configuration

The script `steering_wheel_phase` in `/vigrade/vicrt/standalone/scripts` has been modified due to the new steering wheel system features. Now it must be used just in the initial setup of the Phase drive. Moreover, the script `steering_wheel_kollmorgen` as been removed as the initialization of Kollmorgen drive is no longer needed.

Shakers

The Shakers are now part of the iodb_elab, so the BassShakers Simulink model is not needed anymore.
For this reason, with the update to v20, a new test on SimWB should be created, removing the BassShakers Simulink model from the test itself and including the iodb_elab (which was already used previosuly for other purposes). The BassShakers parameters can be adjusted from the Shakers tab of VI-DriveSim GUI, as described in this chapter.

1.6.3 Release 19.2

Phase Drive Configuration

The script `steering_wheel installed` in `/vigrade/vicrt/standalone/scripts` has been removed and two new scripts have been added:

- `steering_wheel_phase`
- `steering_wheel_kollmorgen`

The former is the script which should be used instead of the old `steering_wheel`. The latter is the script which has been added to support drives made by Kollmorgen

External Vehicle Physics

The reference Simulink models has been renamed removing the Matlab version reference from the files name.

1.6.4 Release 19.1

MotionCueing

A new optional stage has been added to the VI-MotionCueing module to improve the usage of the vertical workspace (Z Projeciton). As default, this option is deactivated so that existing vicue files will produce results consistent with previous versions.
We encourage users to activate the Z Projection option in order to benefit of the new capabilities.

1.6.5 Release 19.0

Action Feedback

The tab *Action Feedback* in the VI-DriveSim User Interface replace the tab *Motors* in the previous software version.
The motor drive's firmware calculates and applies a torque in order to reproduce the desired friction, damping and inertia (which can be specified in the *Simulation parameters* in the *Action Feedback* tab). To calculate the needed torque the firmware uses the information about the hardware friction, damping and inertia which can be specified in the *Cockpit parameters* group in the *Action Feedback* tab.

The steering system has been improved with an **automatic centering system** of the steering wheel and, depending on the type of cockpit of the driving simulator, a **mechanical stopping safety system** is applied to the steering wheel.

Depending on the type of motor's encoder, the automatic centering system is based on:
- *multiturn encoder* : the zero position is calculated and reached respect to the mechanical stops (also the number of turns are taken in account) and the final position is in the middle between the mechanical stops with the steering wheel horizontal;
- *singleturn encoder* : the zero position is calculated respect to the current turn, so the final position is horizontal but it cannot be in the middle between the mechanical stops.

VI-CarRealTime

When a VI-CarRealTime model is configured for running in multithread mode, now the threads related to tire computation are assigned to separate CPUs incrementally starting from the one on which VI-CarRealTime is executed (refer to SimulationWorkBench documentation on how to configure the CPU assigned to a process). In previous version tire threads were allocated in different ways based on the tire model. Please make sure to properly configure your SimulationWorkBench tests in order to keep the VI-CarRealTime CPU and the following 4 reserved. Shielding of the same CPUs is also recommended.

ALL MODULES: for a list of added or changed parameters, please refer to Environment Configuration File

1.7 Revision History

1.7.1 Revision 20.1

Added Capabilities:

Change ID	Module	Description
19622	DriveSim	Parametric vehicle limits block for external vehicles
19273	DriveSim	New Fanatec CSW Usb PID supported (CCURR only)
18869	DriveSim	RFpro output block for external vehicles

21084	GraphSim	Qml folder should be backupped and custom dashboards should not be deleted when uninstalling/upgrading
20612	GraphSim	Increase number of colours for plot curves
20599	GraphSim	Make configuration name resizable
20547	GraphSim	Clearer way to rename hosts
20495	GraphSim	Automatically find supported processes installation path
20483	GraphSim	Rename controller application
20198	GraphSim	VI-Daemon as a separate installer
19959	GraphSim	Check Daemon and Controller compatibility
18973	GraphSim	Show wet track with On Board camera
17694	GraphSim	Handle scenario initialization status on the Controller
14329	GraphSim	Prevent crash running daemon twice

Bugs Corrected:

Change ID	Module	Description
20686	DriveSim	External vehicle model repeated rtdb channels
20094	DriveSim	CarRealTime process not killed when test startup is aborted
19984	DriveSim	External vehicle tutorial fails to run
19813	DriveSim	Error converting v18 environment file
19796	DriveSim	License_toolkit installed with drivesim doesn't start
19754	DriveSim	Shakers initialization not done correctly
19572	DriveSim	Wrong link in kollmorgen drive documentation
19502	DriveSim	Possible overruns with iodb_elab and Kollmorgen drive
19207	MotionCueing	Graphics stutters for high speed yaw with motion compensation active
19044	DriveSim	Inaccurate message severity from hwmap module
18879	DriveSim	Vdc tension on active brake goes lower than 2 V when steering wheel goes in safety
18835	DriveSim	FPE exception on iodb_elab if HWMAP env variables are not initialized
14387	DriveSim	Active seat/belts filter only initialises if vicrt status is in pause (3)
20669	GraphSim	Save button not working for Mirrors pov settings
20614	GraphSim	Wrong current track shown on Controller when two tracks are present with same ending
20426	GraphSim	Dashboard process still running after closing VI-Dashboard manually
19725	GraphSim	Possible memory leak when reloading assets
13240	GraphSim	Prevent Controller application unique instance error after kill on Linux

1.7.2 Revision 20.0

Added Capabilities:

Change ID	Module	Description
18691	DriveSim	Update electric active belts firmware and software
18361	DriveSim	Iodb_human safety implementation
18302	DriveSim	Set LD_LIBRARY_PATH inside simwb startup script during installation
18047	DriveSim	VI-Crt Input signal selection should be SimWB test specific

17937	DriveSim	Update script to update ENV file
17861	DriveSim	Drop support for GraphSim 18
17515	DriveSim	Update runcfg.cmd with default max steering torque
17498	MotionCueing	Parametrize tripod acceleration and velocity limits
17054	DriveSim	Integrated Logging feature
17050	DriveSim	Windows run scripts re-organization
16259	DriveSim	Iodb_res_replay and iodb_csv_replay to be updated with new RTDB channels
15694	DriveSim	Create .bat for testing with runvicrt.bat and iodb_udp
15693	DriveSim	Set default values in runcfg.cmd on windows
15641	DriveSim	Specify which channels are input and output in vehicle interface
15095	DriveSim	Cockpit input block for external vehicles
14211	DriveSim	BassShakers support for External Vehicles
14060	DriveSim	RFpro output block for external vehicles
13979	DriveSim	Certify SCANeR 1.9
11977	DriveSim	Support Simwb 2020.1
11296	DriveSim	Generalize support for gaming steering wheel
10869	DriveSim	RFPro core interface
8980	MotionCueing	Motion cueing enhancement for big yaw angle simulators
8957	MotionCueing	Cueing Stopping Reason in RTDB/GUI
8143	DriveSim	BassShakers User Interface
3326	DriveSim	Identification of cockpit steering properties
18761	GraphSim	Disable Edit process when host is not available
17663	GraphSim	Logger widget
17514	GraphSim	Option to run a Visual process with or without VR
14279	GraphSim	Shadow distance tunable from jtrack
13263	GraphSim	Configurations of processes
11513	GraphSim	Clear performance plot
8050	GraphSim	Option to modify the time window for performance plot
3955	GraphSim	Projector power management

Bugs Corrected:

Change ID	Module	Description
18628	DriveSim	Active Brake upgrade pdo script is not installed with DriveSim
18540	DriveSim	Wrong suggested VIDRIVESIM_BK_IP in GUI
18475	DriveSim	Incorrect channel name in external vehicle documentation
18469	DriveSim	Wrong default value in DIM_SENDFREQ
18367	MotionCueing	GUI field for Split frequency limit maximum value to 49hz instead of 99 Hz
18100	DriveSim	GraphSim channel list for external vehicle model not updated
17857	DriveSim	Wrong gear when running send file with VI-Driver maneuver
12992	DriveSim	When resetting steer drive from Action Feedback GUI, the active brake drive goes in error
8180	DriveSim	Test doesn't start using simWB logging and FTire
18937	GraphSim	VI-Dashboard starts with black screen if executable fullpath is set

18881	GraphSim	Pdf document is not open
18807	GraphSim	Sync not always set even if process is green
18788	GraphSim	Loopback network card not saved
18712	GraphSim	Incorrect label on show tires button
17626	GraphSim	Show chassis and tires buttons not activated correctly with respect to 3D graphics

1.7.3 Revision 19.2

Added Capabilities:

Change ID	Module	Description
14596	DriveSim	Ask if the user wants the icon of the desktop at the end of installation
14517	DriveSim	Unify Phase and Kollmorgen builds
14129	DriveSim	Complete VI-Road API for external vehicle
13972	DriveSim	Iodb_dim must handle NaNs
10589	DriveSim	Iodb_cueing state machine for external physics

Bugs Corrected:

Change ID	Module	Description
14812	DriveSim	Iodb_ext_obj is not compatible with VI-GraphSim 19
14755	DriveSim	Can't set negative value for zero_angle_usr when using script for firmware update
14348	DriveSim	Iodb_resreplay .csv file, lap time counts way too fast and is offset from zero
14275	DriveSim	Drivesim_vicrt_signals.sig not updated if channels are missing in .sig file
14073	DriveSim	Abrupt stop selecting an unreadable vicue file
13893	DriveSim	Vicue parameters saved as all zeros when saving after pressing test button
13872	DriveSim	Active belts continue to pull even when vicrt crashes
13215	DriveSim	Incorrect drive settings for automatically estimated steering parameters
11575	DriveSim	Reverse gear not active
11474	DriveSim	Drivesim parameter user location orientation show parenthesis

1.7.4 Revision 19.1

Added Capabilities:

Change ID	Module	Description
12732	DriveSim	Provide more information on solving error about mismatched version of crt plugin
11240	DriveSim	Road SDK for external vehicle
11024	DriveSim	VI-Drivesim GUI style change
10968	MotionCueing	Rotation contribution neglected while computing vertical position output
10783	DriveSim	Support for GraphSim 19.x
10712	DriveSim	Package Calabogie as demo environment
10463	DriveSim	Res replay should start paused

Bugs Corrected:

Change ID	Module	Description
12836	DriveSim	Lap Sensor in Example Model
12577	DriveSim	Environment lost after saving configuration
12507	DriveSim	Wrong data file extension with rdf set in VIDRIVESIM_ROAD_DATA_FILE
11648	DriveSim	Wrong signals mapped in external vehicle simulink template
11476	DriveSim	Loading Extra Input from RTDB tools causes drivesim to crash
10773	DriveSim	UI crash when runcfg.cmd contains an empty line
10692	DriveSim	Crash attempting to add user input in rtdbtool with an invalid crt xml
10665	DriveSim	Belts Double Muscle Pure Lateral Gain only pulls one side
10551	DriveSim	Remove german output channel names from rtdb concurrent
10135	DriveSim	Drivesim HTML docs NOT correctly displayed with browser Edge
10097	DriveSim	Crash in SCANeR 1.8 visual enabling the warping
9868	MotionCueing	Defects animating DiM 250 results with offline cueing
8993	DriveSim	Collision widget does not work using iod_res_replay
8902	DriveSim	Steering wheel speed limit doesn't trigger
8748	DriveSim	Missing documentation about changed ECAT slots
8498	DriveSim	Restore due to path distance working only on one side
8367	DriveSim	Steering_wheel script may fail to discover AxM-II drive
7387	DriveSim	Creation of RTDB from DriveSim RTDB tool fails

1.7.5 Revision 19.0

Added Capabilities:

Change ID	Module	Description
8019	Drivesim	Expose steering controller status as RTDB entry
7971	Drivesim	Integrate VI-CarRealTime 19.0
6311	Drivesim	Package additional CarRealTime plugins with DriveSim rpm
5802	Drivesim	Certify redhat 7.3
4932	Drivesim	Remove ges_chassis_XFORM.X as res replay input
4692	Drivesim	Support Beckhoff EP 4174-0002
3907	Drivesim	Add dedicated license to active belt connection
3906	Drivesim	Add dedicated license to active seat connection
3905	Drivesim	Add dedicated license key to cueing online
3904	Drivesim	Add dedicated license key to cueing offline test
3903	Drivesim	Add dedicated license key to iodb_scaner
3902	Drivesim	Add dedicated license key to iodb_podium
3353	Drivesim	Expose vehicle user location in VI-DriveSim GUI
3352	Drivesim	Customer want to reuse the same xml file on multiple tracks
3288	Drivesim	Certify SCANeR 1.8
3230	Drivesim	Position based steering wheel control

3220	Drivesim	SimWorkbench 2018.3
3044	Drivesim	Double muscle active belts
1273	Drivesim	External vehicle physics

Bugs Corrected:

Change ID	Module	Description
6282	Drivesim	First user defined restore point is ignored
6264	Drivesim	Cannot save config after deleting rdf file from DriveSim GUI
6251	Drivesim	Seg fault from iodb_csv with invalid network configuration
6114	Drivesim	No message reported when restart is rejected due to non 0 steering angle
5813	Drivesim	Path_s cumulative value in pause status
5616	Drivesim	Execution error not detected by Crt Solver
4717	Drivesim	Active belts can't be re-enabled after being disabled
4056	Drivesim	Offline cueing executable doesn't report version number
3567	Drivesim	If yaw dynamics parameters are missing from vicue file, incorrect default values are set
3545	Drivesim	Res replay discontinuity on looping for closed loop result
3379	Drivesim	Yaw Dynamics GUI Precision
1180	Drivesim	Steering Torque Gain in Action Feedback panel does not work

1.7.6 Revision 18.2

Version	Change ID	Module	Change
18.2	FDB-6018		Crt_tsdll.dll not installed with drivesim
	FDB-6000	iodb_hwmap	Add clutch pedal handler in iodb_hwmap
	FDB-5956	iodb_ui	Wrong label in VI-MotioCueing GUI in Drive Sim
	FDB-5919	iodb_elab	Iodb_elab possible fialure
	FDB-5917	iodb_ui	Pressing Seat GUI button, belt parameters are reset to 0
	FDB-5904		Shared VI-CarRealTime databases and solver input file included in linux distribution
	FDB-5889	iodb_ui	Cannot modify values in motion cueing
	FDB-5827	iodb_elab	Initial Values for Active Seat and Belts parameters neglected when underlying test contains only iodb_elab
	FDB-5818	iodb_elab	Muscle belt valve saturation with all the belt parameters set to 0
	FDB-5817	iodb_elab	Active Seat valves saturation when only iodb_elab is running

1.7.7 Revision 18.1

Version	Change ID	Module	Change
18.1	FDB-5812	iodb_ui	VI-GraphSim hosts not visible in the GUI
	FDB-5810		Incorrect information in offline MotionCueing Test Documentation
	FDB-5809	iodb_ui	Automate cdb registration for offline MotionCueing Test
	FDB-5808	iodb_ui	Offline MotionCueing attempts to hook VI-Animator 17
	FDB-5786	iodb_human	VI-GraphSim does not show rotating steering wheel in pause mode when connected to DriveSim for Windows
	FDB-5782	vicrt	FTire experiment fails on CCURR due to wrong thread assignment

	FDB-5775	iodb_scnr	Support for scaner 1.7
	FDB-5770	iodb_cueing	Variable Yaw axis
	FDB-5752	crt_simdll	Initial gear may be ignored
	FDB-5746	iodb_scnr	Rtg reader not parse array signals correctly
	FDB-5742	crt_simdll	Solver crash running drivesim event outside of simwb
	FDB-5730		Create an installation package for VI-Dashboard
	FDB-5713	iodb_ui	Offline MotionCueing test ignores specified .plt file
	FDB-5702	iodb_ui	Offline motion cueing test mode loads vicue file information incorrectly
	FDB-5688	iodb_ui	VI-CarRealTime license locked by drivesim gui
	FDB-5687		Sedan car model executed in VI-DriveSim does not change gear
	FDB-5668	iodb_cueing	Cannot pause during safe wait
	FDB-5664		Steering Drive update guide is not accurate
	FDB-5605		Tire scrub plugin should be disabled when tirelimits is not active
	FDB-5591	iodb_scnr	Support send data to SCANeR RT gateway

1.7.8 Revision 18.0

Version	Change ID	Module	Change
18.0	FDB-5601	vicrt	Wrong gear initialization when intial gear is not set to 0
	FDB-5599		Support for both inline and belt connected steering motor
	FDB-5575	iodb_scnr	NearestTargetcount attribute not recognized from rtg file
	FDB-5545		Unistall procedure doesn't prompt about locked files
	FDB-5531		Installation procedure should update existing configuration files
	FDB-5517		New firmware for phase steering system
	FDB-5512		Automatic paramter transfer from dynamic model to steering system
	FDB-5487		Incorrect VI-GraphSim default FOV setting
	FDB-5485	iodb_ui	Inconstent active channel set for input vicrt input channels
	FDB-5464	iodb_ui	New steering system status monitor in GUI
	FDB-5463	iodb_elab	Autocentering function for steering system
	FDB-5642	iodb_ui	Graphical setting of steering system safety threshold
	FDB-5377	iodb_human	Support for newer logitech devices like G920
	FDB-5359		DriveSim for windows consume excessive CPU
	FDB-5353		Support for SIMWb 2017.1
	FDB-5352	vicrt	Standardize distribution of rack and pinion steering for linux
	FDB-5214	iodb_ui	Expriment can be started even with unsaved configuration changes
	FDB-5213	iodb_csv	New license check for Wintax interface
	FDB-5312		Support for Matlab 2016b

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