

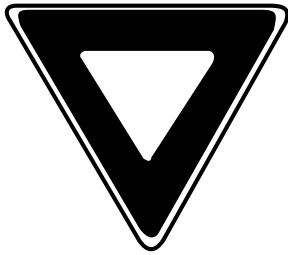


Manual for:





Version 1.2



**Never operate your smartphone while driving!**

**Define all settings while the vehicle is stationary!**

**A solid and secure mounting for the smartphone inside the vehicle is absolutely demanded to guarantee error-free feature of BILSTEIN iRC!**

**Do not be distracted by your smartphone from the road!**

### **Mode of Operation**

BILSTEIN iRC transforms your manually, electronically adjustable BILSTEIN ridecontrol suspension to an active BILSTEIN iRC suspension.

The BILSTEIN iRC module is equipped with acceleration sensors to detect different driving situations and automatically adjust the BILSTEIN ridecontrol suspension correspondingly.

This has the advantage that you can enjoy comfortable driving and you are supported by the BILSTEIN iRC system in extreme situations like full braking or quicker cornering, by adjusting the shock absorber setting of the BILSTEIN ridecontrol automatically. Thus, the ride comfort and also the driving safety been increased at the same time. With an easy to use smartphone application you get a professional tool, so you can adjust the default parameters set by the manufacturer to your own needs and desires.



## **Operation of the Smartphone App (example of iPhone)**

### **General**

The screen of BILSTEIN iRC smartphone app is permanent active while showing the data on the display (default). Be aware of higher power consumption of your smartphone. The basic colors of the App are designed preferably dark, to save battery power of the smartphone by less display brightness.

Fix your smartphone firmly to your vehicle by using the provided holder.

The BILSTEIN iRC smartphone app communicates via Wi-Fi with the BILSTEIN iRC control. For each controller one app linking at same time is provided. Avoid the simultaneous connection of two or more smartphones with the BILSTEIN iRC network, since this would disturb the communication. Disable not needed WLAN (WiFi) on other smartphones, if necessary.

The operation of several smartphone one by one is possible without any problems. Be aware that all parameters saved in the BILSTEIN iRC controller will always be overwritten with the settings of the connected phone.



## Preparations



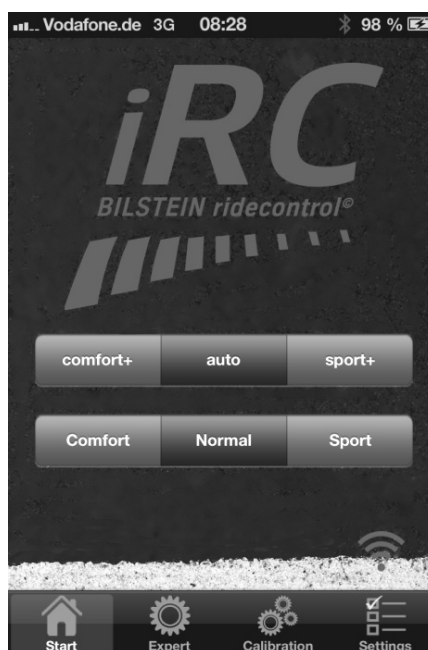
The BILSTEIN iRC system is immediately ready to use after starting the vehicle.

Open the settings of your smartphone and navigate to WLAN (WiFi). Connect to the BILSTEIN iRC network.

The default WLAN (WiFi) key word is „1234567890“.

## Start Screen

On the start screen is the mode button of the app so that you can select between the three different modes „comfort+“, „auto“ and „sport+“. Be aware that you can only select a mode when your smartphone is linked to the BILSTEIN iRC controller by WLAN (WiFi). Otherwise, the mode button does not accept any commands



You can see the status of the WLAN (WiFi) connection on your home screen on the WLAN (WiFi) icon in the lower right corner. If it is blue, the connection is successful. A yellow symbol appears when there is increased data traffic. When you see a red symbol the WLAN (WiFi) connection failed. Press the icon again to restore the connection.

The modes „comfort+“ and „sport+“ match with the unadjusted settings of the BILSTEIN ridecontrol suspension.

As soon as you select the “auto” mode an additional menu appears for three different automatic profiles „Comfort“, „Normal“ und „Sport“. These profiles have already a factory-preset.

Now you can select a profile and enjoy your ride with your automatically working BILSTEIN iRC suspension.



The BILSTEIN iRC module is been equipped with a high- quality, three-axis acceleration sensor system. This system allows the measurement of the total acceleration in all three spatial axes in real time.

It can be operated in two automatically modes:

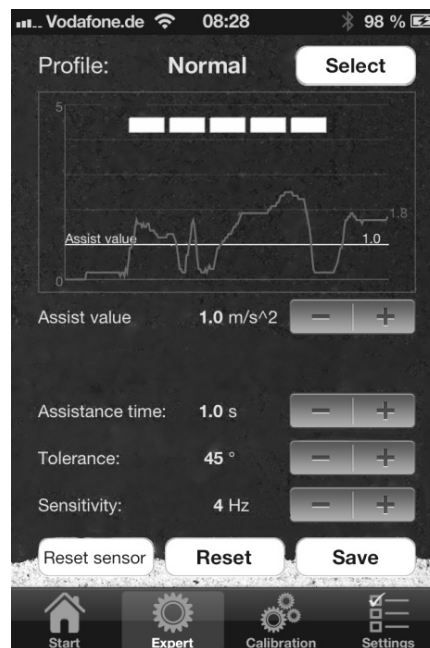
1. The 1D mode is default set by the manufacturer and works directly after start. This mode is very fast and also been used for an easy entry to the BILSTEIN iRC world.
2. The 2D mode needs an adaptation (calibration) of the acceleration axis of the BILSTEIN iRC module to the vehicle axis system. In this mode you are concerned in detail with the vehicle technology. The system enables you detail adjustment of parameter for your vehicle in the 2D mode.

The system operates independent from acceleration direction to the vehicle axis in the 1D mode. It senses the acceleration of the vehicle and calculates an acceleration vector in space from the three acceleration directions. If the liminal value saved in the default profiles is exceeded the reaction of the system is an adjustment of the damping forces of the BILSTEIN ridecontrol shock absorbers according to the saved values in the corresponding profile.

A comparison with the vehicle axis does not occur in this mode.



## Expert Screen 1D-Modus



The Expert Screen is been used for automatic configuration of the three profiles from the Start Screen.

At the real-time view you can follow the current, three- dimensional acceleration values of your vehicle, shown on a graph after select the auto mode on start screen. From manufacturers default the system is operating in 1D mode, so the total acceleration of all three directions of space is shown one-dimensional together.

Additional to the line graph also a bar graph appears depending on the acceleration value. As long as the bars are shown as a frame the shock absorber

in your vehicle stay in comfort setting. The change from comfort to sport setting is displayed with a filled bar.

Each parameter of each profile can be adjusted with the +/- button.

The liminal value (Assist value) can be adjust in the 1D mode as well as the duration of support from the BILSTEIN iRC system.



### **Assist Value**

A permanent displayed horizontal line on the real-time view shows the switching threshold (assist value) of that acceleration, when your BILSTEIN iRC switch the BILSTEIN ridecontrol shock absorber to the sport mode.

### **Assist Time**

The assist time describes the duration of support by the BILSTEIN iRC system.

After falling below this switching threshold (assist value), the sportive shock absorber setting was hold for a while (assist time), before the system goes back to the comfort mode.

### **Tolerance Value**

The parameters of tolerance and sensitivity are used to filter faults, caused by bumpy roadway for example. As this also lead to accelerations in all directions of the vehicle.

The higher the value of this angle is, the more faults are removed. This can lead under circumstances, however, that occasional cross and longitudinal acceleration be not recognized. A value of approx.  $45^\circ$  has proved to be optimal.

The result of lowering of that angel , that more acceleration in the vertical axis of the vehicle be taken into calculation of acceleration, with the result that for example driving on a mountain road the damping forces are rather increased.

### **Sensitivity**

The situation is similar in sensitivity. The smaller the threshold frequency is the less susceptible to faults the system will be. However, the engagement slows to a limited extent. A value about 3Hz was acceptable for regular traffic. A quite comfortable driving is possible with less threshold frequency, for sporty driving you need a higher value.





## Reset Sensor

The “Reset sensor” button can be used, if the sensor has a large offset on the zero line when the vehicle is on a plane ground (visible by an offset about  $0,4\text{m/s}^2$ ). Smaller deviation is within the tolerance range.

Also, leaps or obvious faults in the diagram can be solved by a reset of the sensor.

When there is a system error a sensor reset should only be done when the vehicle stand still on a plane ground.

## Reset

The “Reset” button can be used, to resetting each profile to the factory default settings.

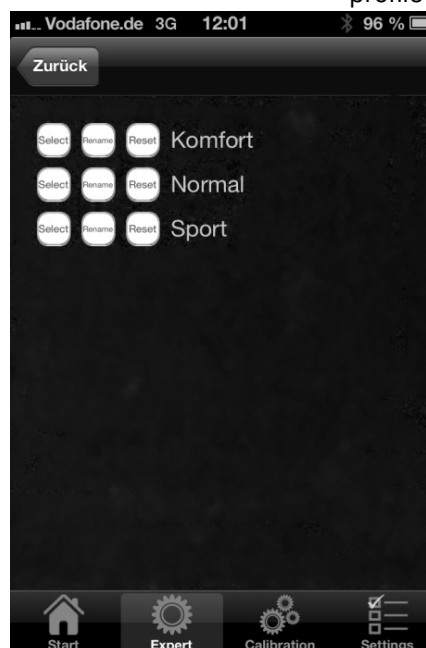
## Save

Press the “Save” button to save the current parameter of each current profile.

If you like to give the values to another profile, first select the profile, change the values as you like and then press the “save” button.

## Profile Screen

On top you can select one of the three profiles „Comfort“, „Normal“ und „Sport“ (the selected profile is been highlighted).

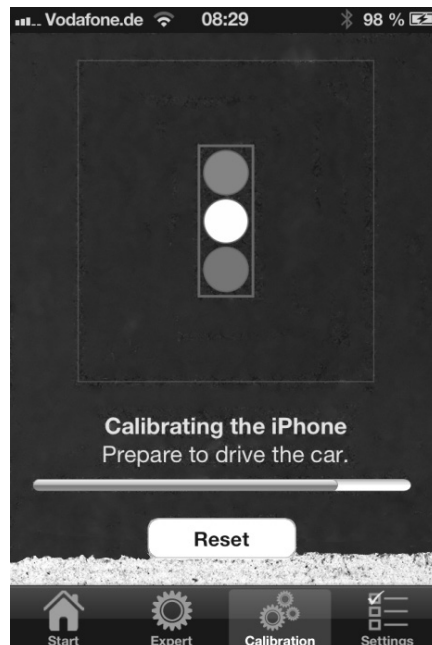


Press the small profile text field a new menu will be open where you can give a new name to your profile as it suits to you. Press the "Reset" button to set each single profile back to the factory default settings.



## Calibration Screen

(Switch over from 1D to 2D mode)



For full functionality of your BILSTEIN iRC you can calibrate the system in the Calibration screen to inform the BILSTEIN iRC about the directions of the longitudinal and lateral axis of the vehicle. The calibration will be saved in the control unit and must be done only once.

This requires that the smartphone is firmly and securely installed in the vehicle (for instance with a window socket).

Two orientations for the smartphone are possible: a portrait orientation while the smartphone is been fixed in upright format and the rear side is positioned in driving direction.

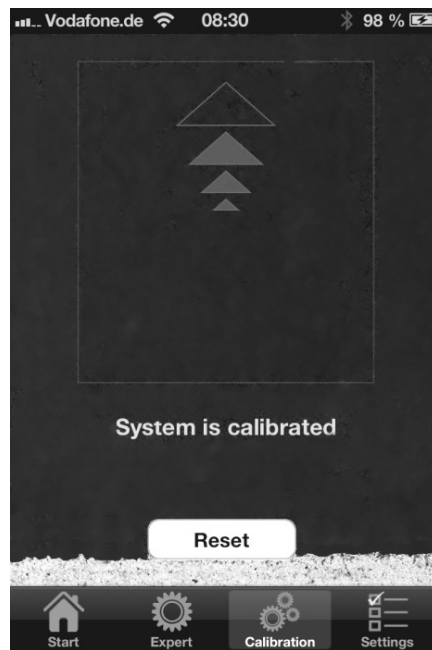
Another option is the horizontal orientation, while the display shows up and the upper edge in driving direction.

In both options, make sure that the smartphone has a tight fit and is aligned with the vehicle axes.

Now press the "Calibrate" button. The calibration starts now for about 25 seconds. Meanwhile, neither the smartphone nor the car must be moved. A red signal light is shown.

Once the smartphone is calibrated, the green signal light indicates that you can move off with the vehicle now. While driving, the automatic calibration of the Bilstein iRC control unit is going on. During the calibration ride various accelerations of the sensor are necessary, the time for the complete process can take some minutes and depends also on your style of driving and the distance. Especially suitable are winding roads with many throttles and braking.

You can stop the calibration process at any time by using the "cancel" button.



As soon as the calibration is been finished, you get that information on the display of your smartphone. The smartphone can be used normally now and the orientation in driving direction is no longer requested.

On the display the arrow sights indicates the detected acceleration in direction of the vehicles axis when you go around a curve or brake.

Arrows as a frame indicates that the BILSTEIN iRC operates the BILSTEIN ridecontrol shock absorbers in comfort mode, while a full filled arrow indicates switching to sport mode.

The main axis of acceleration is always displayed; means the alignment of the vehicle where the highest acceleration arises at this time.

### Reset (of calibration)

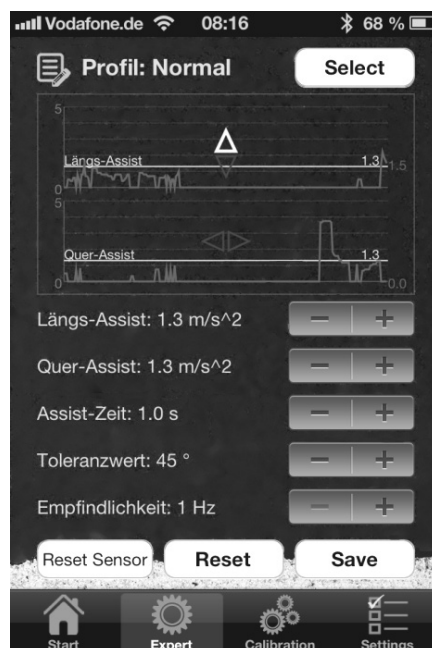
Do you feel the display of accelerations after calibration is faulty, you can reset the calibration by pressing the "Reset" button.

Please check the alignment and a secure fastening of your smartphone and repeat the calibration.

If you want to return from the 2D mode of BILSTEIN iRC in the 1D mode, also press the "Reset" button in the Calibration Screen.

You are thereby automatically in the uniaxial mode of operation of the system and can use it as normal before.

### Expert Screen 2D-Modus



After the calibration of the BILSTEIN iRC on the Expert Screen you can see an automatic option for the separate adjustment of the assist values of the lateral and longitudinal accelerations.

This means that the share of accelerations acting on the vehicle in the plane of the vehicle longitudinal and lateral axis is depicted separately from each other and also can be set. This allows a much finer adjustment of the switching parameters on the vehicle and the individual driver profile.



## Settings Screen



In the fourth Screen various system settings can be made.

In the upper range you find the icon of the LED-switch of the BILSTEIN ride-control system. Here you can adjust the lightning for the three modes „comfort+“, „auto“ und „sport+“ individual (lightning of the ring on/off, status-LED on/off).

By pressing the LED-switch icon you get the different types of illumination. It is possible to assign the same illumination to different modes or deactivate the illumination.

Also the languages of the BILSTEIN iRC app can be selected here. Currently only German and English languages are supported, with more to follow.

In the bottom range more information about ThyssenKrupp BILSTEIN GmbH are available.

## FAQ

BILSTEIN iRC is not compatible with Google Nexus 4 (LG)