



User's Guide

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Contents

Overview	3
Commissioning	5
User Interface Tablet	11
Touch Control.....	12
Control elements.....	13
User Interface Phone	17
Connect.....	18
Button Control.....	18
Accelerometer Control.....	19
Wheel Control.....	19
Settings	21
APP Settings.....	21
Switch Settings	22
Other Settings.....	23
Receiver Channel Reference	24
Transmitter Layout.....	26

1

Overview

With the *udpRC* app and a *PiKoder/SSC wRX* wlan-receiver you control your models with your Android™ smart phone or tablet using intuitive and very efficient user interfaces. You will have eight channels (four or six servo- and four or two switching channels) at your fingertips. *udpRC* supports features such as, but not limited to:

- Associating receiver channels to UI elements such as sticks and switches
- Trimming for servo channels
- Reversing servo channels
- Fail safe mode
- Mixing

The radio control function employs the smart phone's build-in wlan module. Depending on the module's spec your control range could be up to a few hundred meters.

The user interface for eight channels is optimized for a tablet. For maintaining usability with a phone some user interfaces were adjusted as needed.

Commissioning the app requires two simple steps:

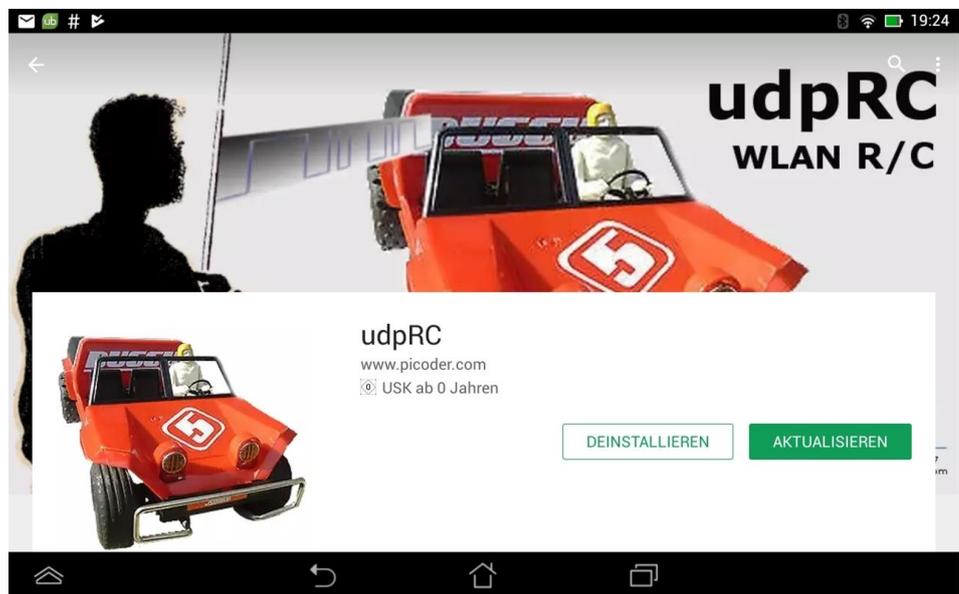
- Install the app through the Google Play Store and
- Connect your Android device to the Access Point provided by the receiver following standard Android procedures

These initial steps are described in section 2; after commissioning the app you simply start the app like any other app on your device. Section 3 presents the user interface on a tablet and section 4 covers the use with a phone. Section 5 illustrates the preferences and settings of the app.

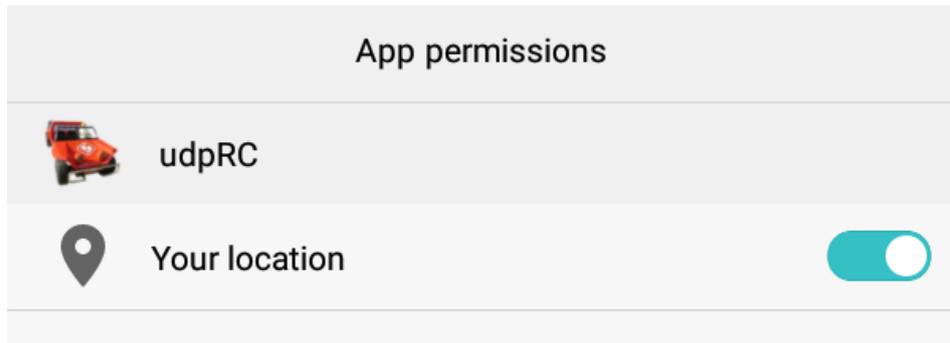
2

Commissioning

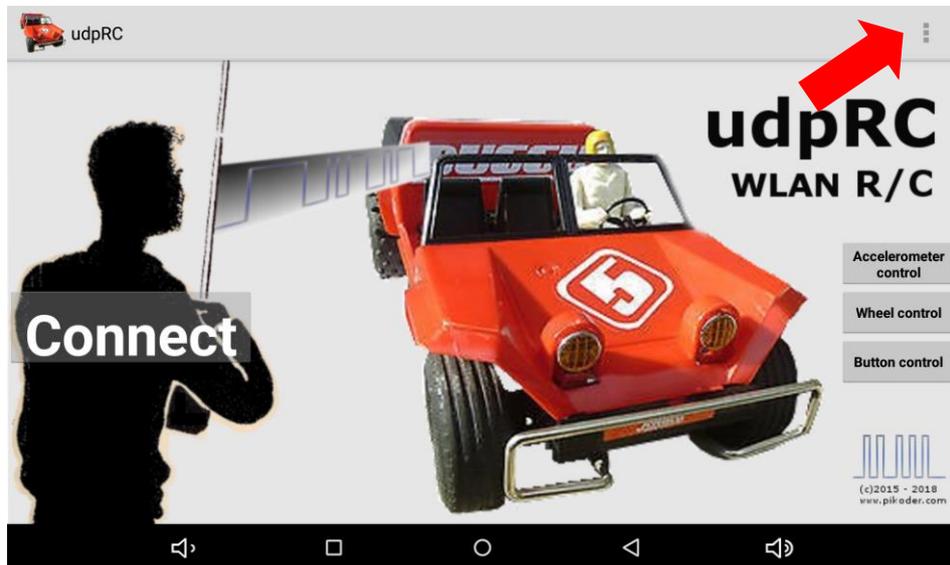
The *udpRC* app is available free of charge in the Play Store; the installation is started after hitting the button and does not require any user interference. Please bear in mind though that you have to grant wlan privileges to the app.



Please note that Android version 6 (“Marshmallow”) and up additionally requires access to the location services due to a revised permission concept. This permission can be granted prior to starting the app under Settings/Apps/udpRC (please refer to the screen shot on the next page) or interactive before the initial connection to the receiver.



The default settings of the app are prepared for the use with a PiKoder/SSC wRX receiver with standard settings. If you have changed the receiver settings regarding SSID and/or password then the settings of the app have to be set accordingly. You would have to start udpRC to get access to the app's preferences.

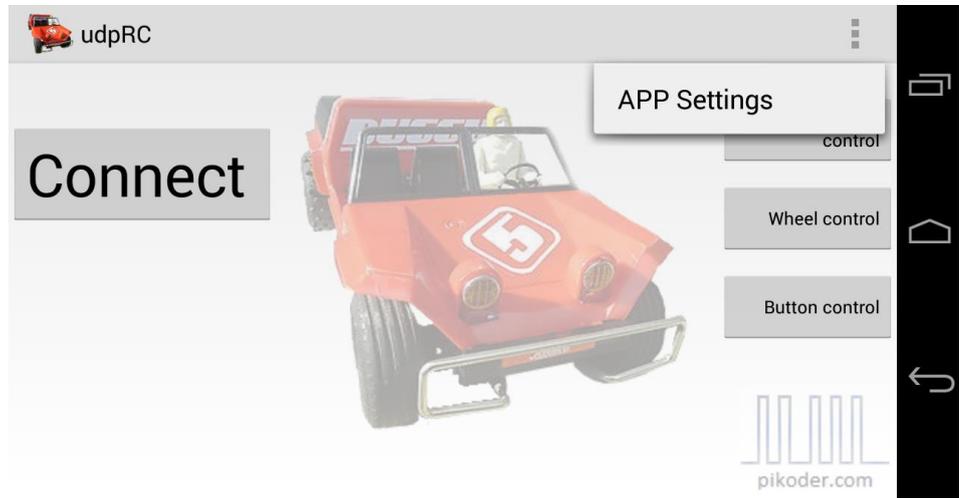


Start Screen of the udpRC tablet version



Start Screen of the udpRC phone version

After selecting the preferences menu you will be offered the submenu shown in the following picture.



Select *APP Settings* and the next screen will appear.



udpRC

ACCESS POINT SETTINGS

Receiver SSID
Set receiver's SSID

Receiver password
Set password

APPLICATION SPECIFIC SETTINGS

Switch Settings
PWM or Static Output

Other Settings
Mixing, Time Out and Neutralization of Sticks

RECEIVER CHANNEL REFERENCE

Receiver Channel Reference
for Eight Channel Standard UI

Receiver Channel Reference
for legacy UIs

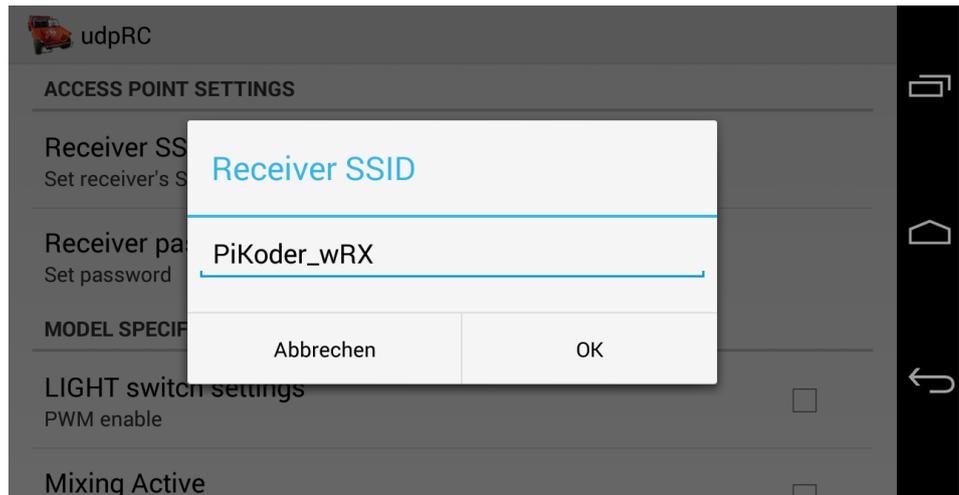
TRANSMITTER LAYOUT

Transmitter Layout
Select transmitter layout

ABOUT

Version
1.17

Select *Receiver SSID* to enter the revised name of your receiver. The change of the password happens in a similar fashion. Please note that the other settings are described in section 5.



After completing the installation and the optional change of the SSID and the password the second and final step requires you to connect to the Access Point offered by the receiver.

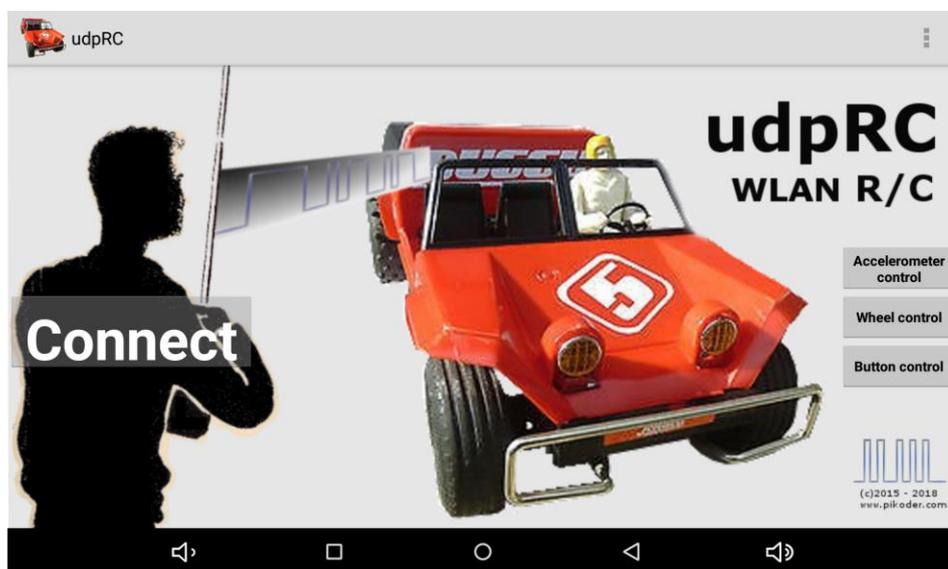
To do this, enter the WLAN menu inside Android Settings, then search for your receiver, select this wireless network and connect. The default password for your PiKoder receiver is “password”. This completes the setup of app. After completing this step udpRC will be able to connect to your receiver automatically when required.

Please note: It is highly recommended that you remove the existing Android network settings related to a PiKoder/SSC wRX receiver when you upgrade your software to avoid inconsistent data settings.

3

User Interface Tablet

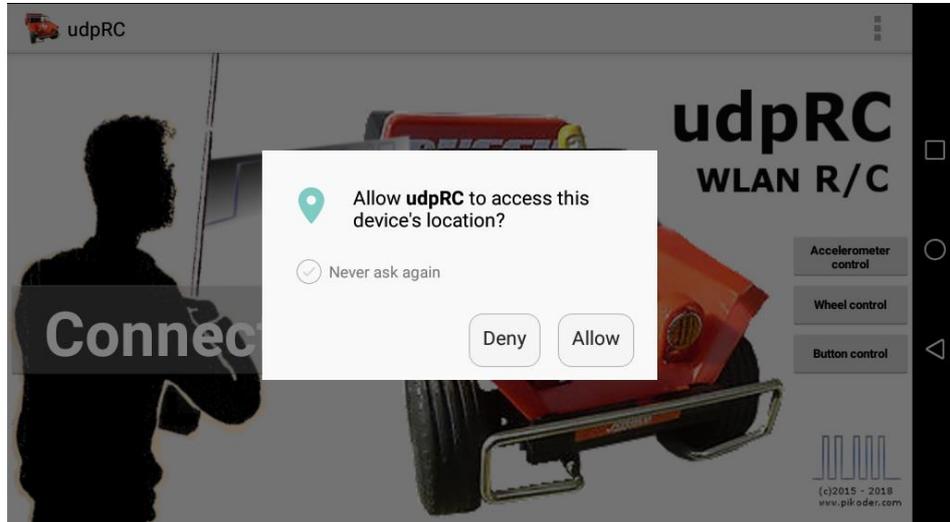
After starting *udpRC* you will be seeing the main screen which allows you to select from different user interfaces. Additionally, this screen would be your starting point for specific settings. Please note that all control related screens are fixed to a landscape format to simplify model control.



By hitting the *Connect* button the user interface of the eight channel RC is offered. Additionally, you will find three buttons on the right hand side of the start screen which will provide access to the legacy interfaces which only support two channels each.

If the location permission would not be granted when you try to connect to the receiver through one of the user interfaces then a dialog box will appear

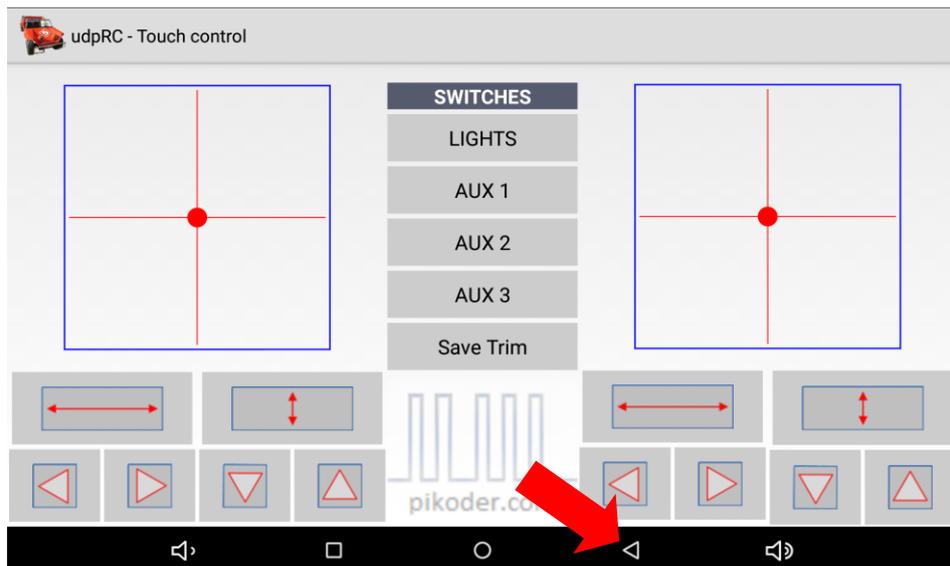
and ask you to allow for location access. Please note that with the introduction of Android 6.0 the connection to the receiver cannot be established without this permission. This means that the app will continue to display the opening screen until the permission is granted.



Touch Control

Once you hit the *Connect* button the app will establish a connection to the receiver. This process will be reflected in status messages such as “Connecting to receiver...” and “Connected to receiver.” Please note that it may take a few seconds to establish the connection.

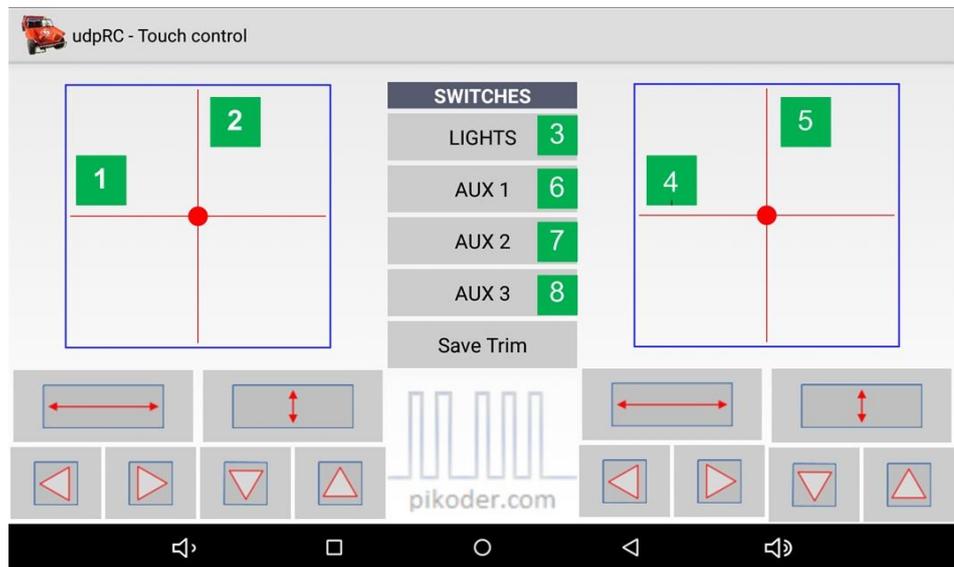
Please note that hitting the home button (see red arrow below) would always bring you back to the main menu.



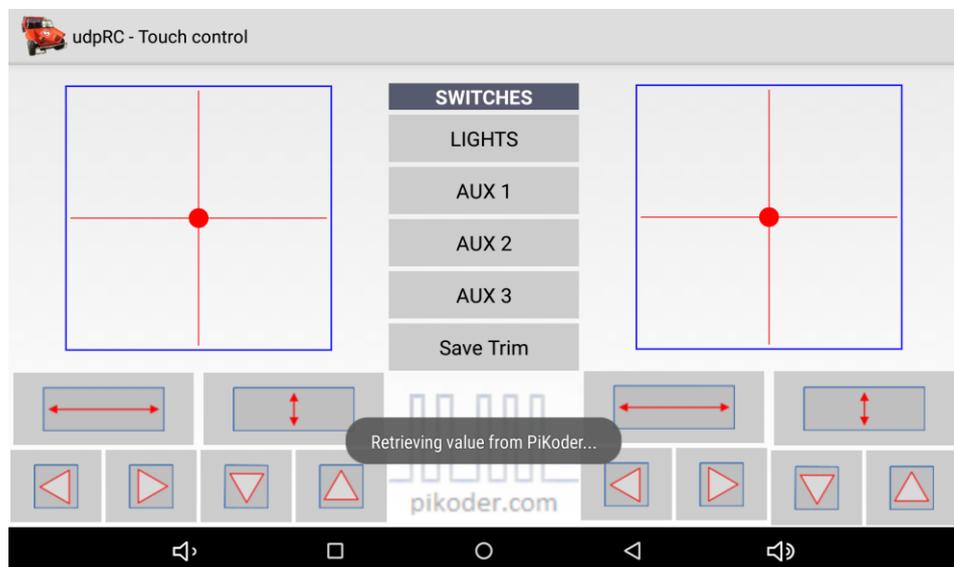
Control elements

Touch Control implements two virtual thumb sticks. You would control your model by touching and moving the red buttons. All directions can be trimmed independently and be reversed. Additionally you are in control of four switch channels (LIGHTS, AUX1 – 3) which output either PWM signals or digital I/O.

The default reference between the channels of the PiKoder/SSC wRX receiver to the sticks and switches is depicted in the following image (the number in green field references the channel number of the receiver). If you want to change this setup then please refer to the Settings section.

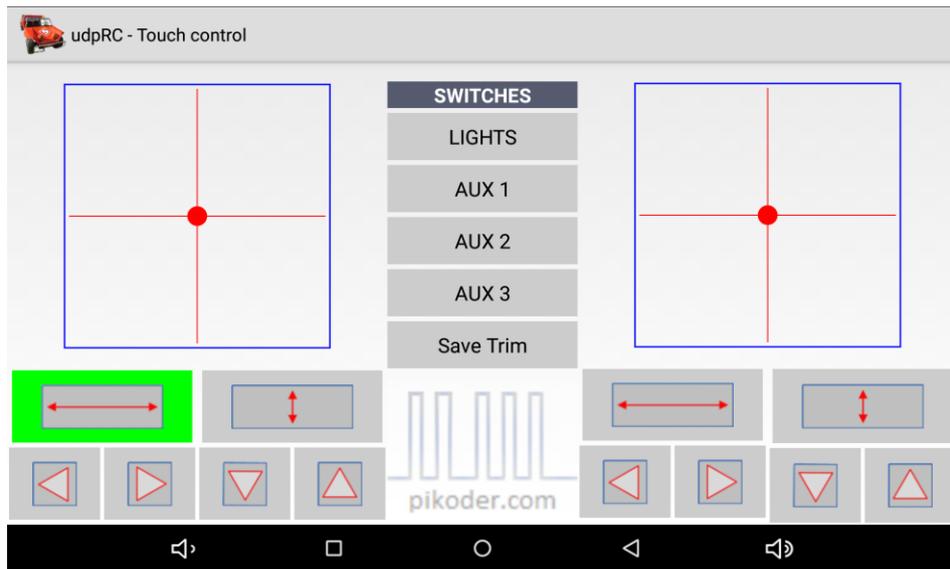


You would employ the trim function to adjust the neutral setting per channel. After initially hitting one of the arrows for a channel the current settings will be uploaded from the PiKoder/SSC and will be used for trimming.

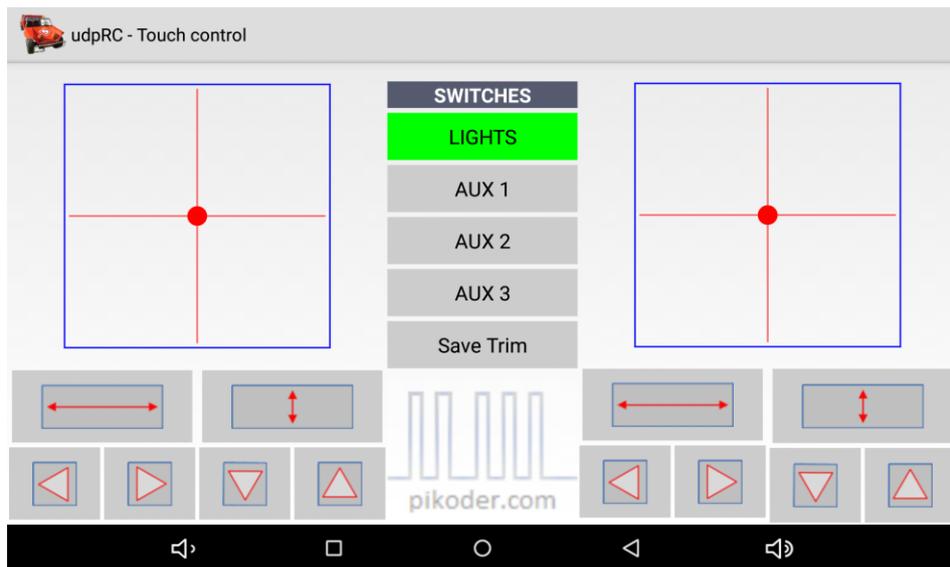


Once the parameters are uploaded, every touch of the arrow will adjust the neutral position accordingly up to the minimal respectively maximum value for this channel. You will be able to save your trim settings back to the PiKoder/SSC wRX to save you trimming every time you turn your receiver on.

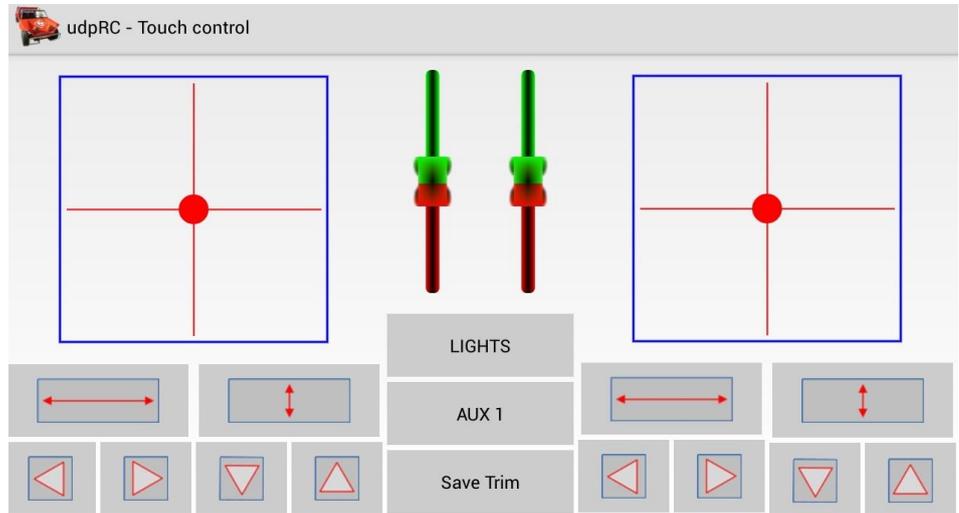
You would reverse the sticks by hitting the respective button. The activation of the reversal would be indicated by turning the background color of the button to green.



The switch channels are turned on and off by hitting the respective buttons. A channel turned on will also be indicated by a green button background.



If you were to need more servo channels in your application, then udpRC offers a UI with two additional sliders. The change of the UI is described in the *Settings* section. The two sliders are associated with channel 7 and 8.

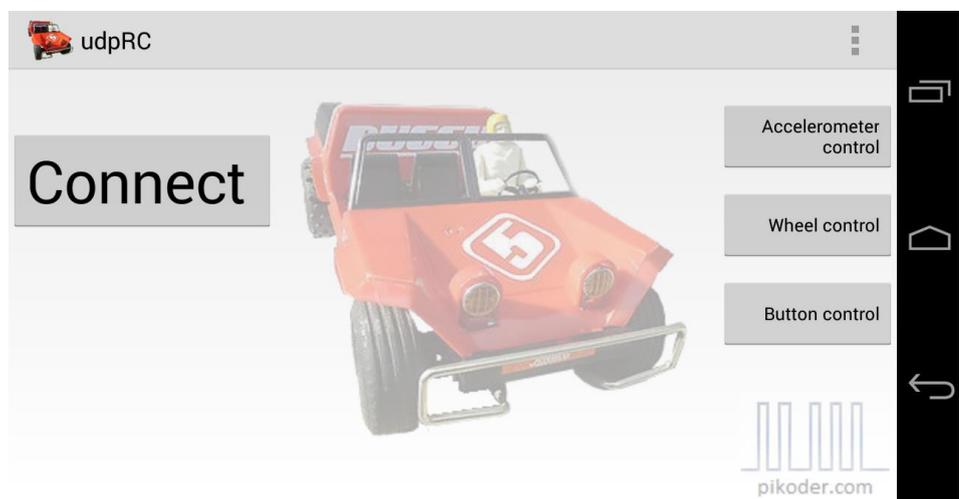


Please refer to the following section regarding the legacy interfaces *Accelerometer Control*, *Button Control* and *Wheel Control*.

4

User Interface Phone

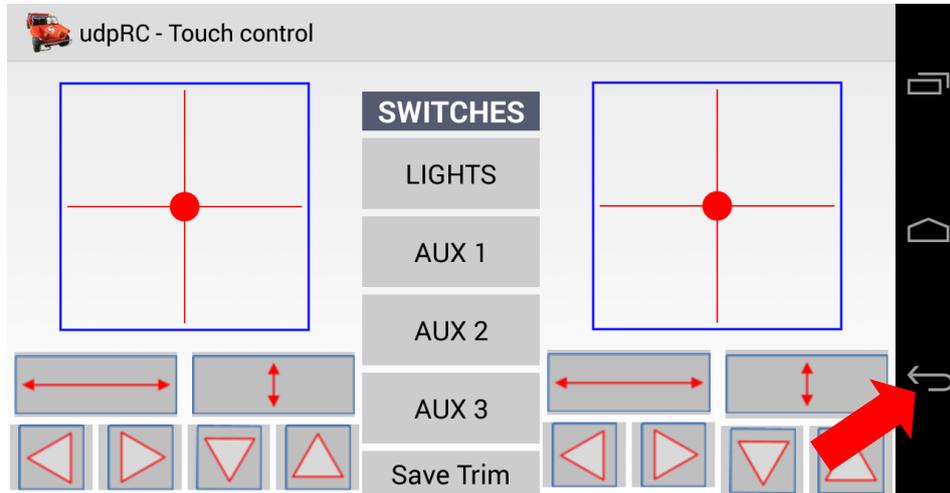
After starting the app you will be seeing the main screen which allows you to select from different user interfaces. Additionally, this screen would be your starting point for specific settings. Please note that all control related screens are fixed to a landscape format to simplify model control.



To start controlling your model you would hit one of the four buttons selecting your preferred interface. Please note that the phone mode also requires the location permission to connect to the receiver. Please refer to the User Interface Tablet description for more details.

Connect

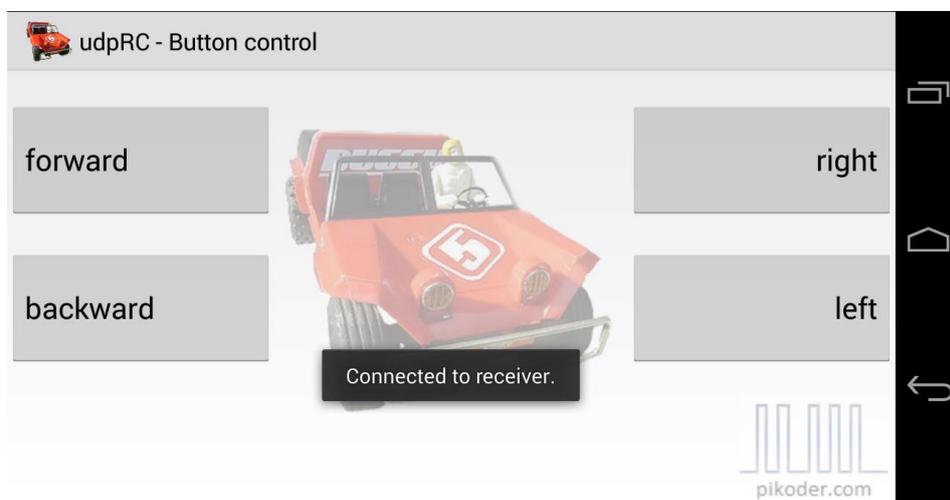
This user interface implements two virtual thumb sticks and four additional switch channels putting an eight channel RC at your fingertips. For more information please refer to the respective section in the *User Interface Tablet* documentation.



Please note that hitting the *back* button (see red arrow) would always bring you back to the main menu.

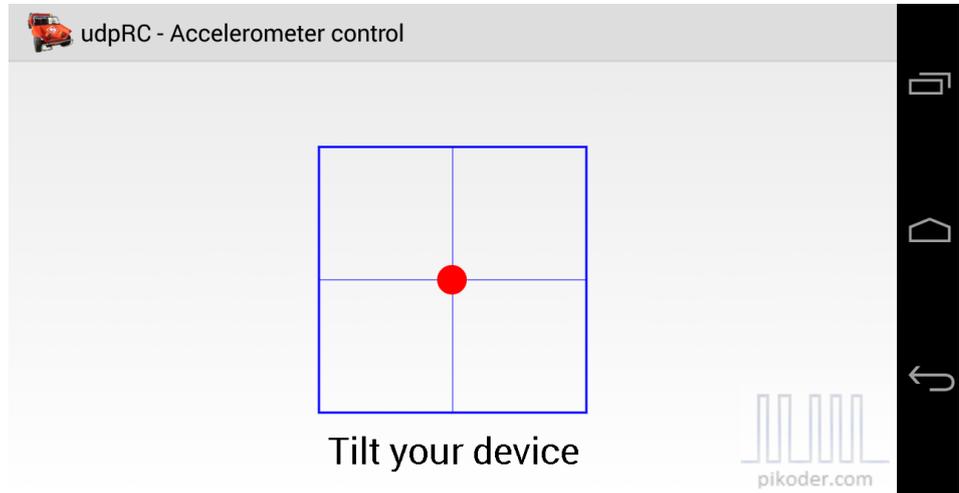
Button Control

Button Control offers a very simple user interface: you would control your model by simply hitting the command button. Once you started this user interface, the app will establish a connection to the receiver. This process will be reflected in status messages such as “Connecting to receiver...” and “Connected to receiver.”.



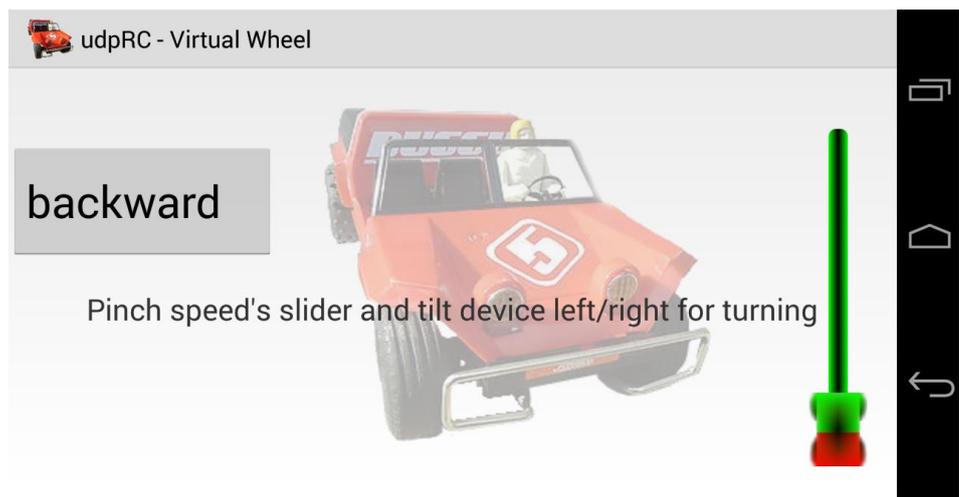
Accelerometer Control

In selecting this user interface you would move your device to control your model; the app does evaluate these movements and translates them into the respective commands. The position of the virtual stick is shown on the screen in a coordinate system.



Wheel Control

Wheel Control represents a combination of the Accelerometer and the Touch Control: directional control is based on movement of your device similar to the Accelerometer Control and speed is controlled by a slider.



5

Settings

Your starting point for settings would also be the main screen (s. red arrow) for both user interfaces as already shown in section 2. After hitting the preference icon the menu shown below becomes available.



After hitting APP Settings the main preference screen will become available.

APP Settings

In this section you would be able to review basic settings of the app. The most relevant settings cover the access point's name (SSID), the output mode for the switches and the setting for mixing.



udpRC

ACCESS POINT SETTINGS

Receiver SSID
Set receiver's SSID

Receiver password
Set password

APPLICATION SPECIFIC SETTINGS

Switch Settings
PWM or Static Output

Other Settings
Mixing, Time Out and Neutralization of Sticks

RECEIVER CHANNEL REFERENCE

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Receiver Channel Reference
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TRANSMITTER LAYOUT

Transmitter Layout
Select transmitter layout

ABOUT

Version
1.17

Switch Settings

Switch settings determines whether a channel would output a PWM or a digital (0 or 1) I/O signal. If the box is not checked, the channel will behave as a static I/O pin. When checking the box a PWM signal will be applied to the channel: for on the pulse length will be larger than 1800 μ s.



Switch Settings

LIGHT switch settings

PWM enable

AUX1 switch settings

AUX1 PWM enable

AUX2 switch settings

AUX2 PWM enable

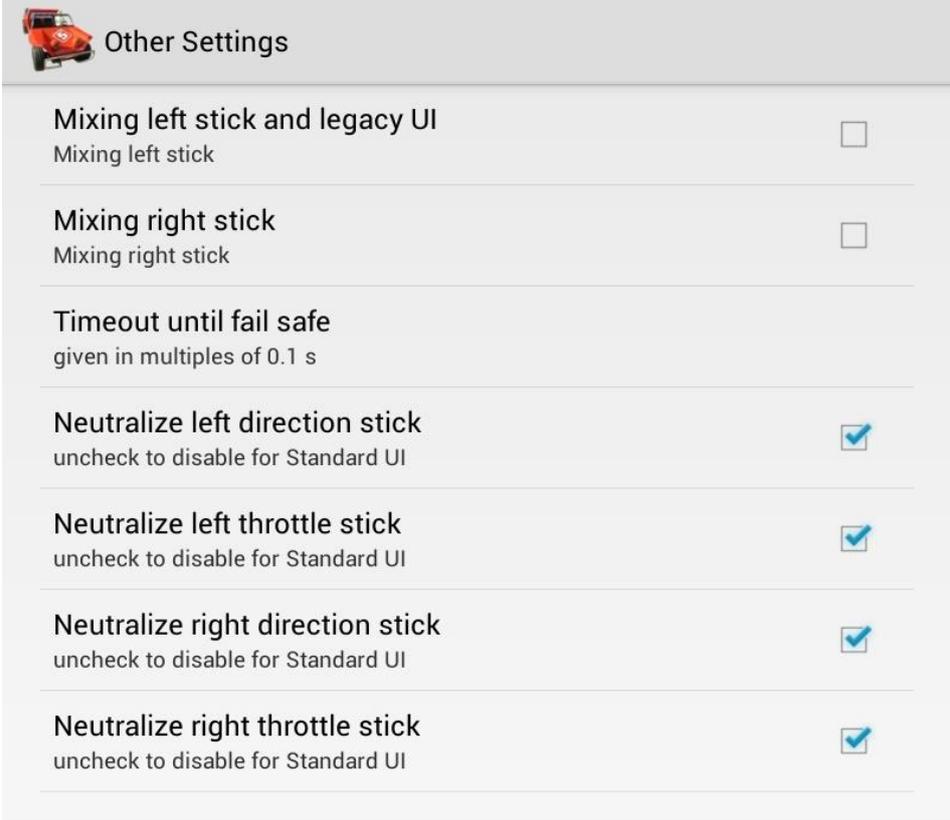
AUX3 switch settings

AUX 3 PWM enable

Other Settings

Mixing is a specific feature required to control „two motor models“, such as tanks („Mixing Active“); if your model requires a conventional control (one channel for direction, one channel for speed control), then uncheck the box. The mixing mode can be activated per stick independently. For the legacy UIs please check the *Mixing left stick* box.

The *udpRC* app features a „fail-safe“-function (in combination with the *PiKoder/SSC wRX*): if within a given time frame between 0.1 to 99.9 seconds no new command would be received then all channels will be set to a neutral position. Since you can pre-program these neutral positions for your model (refer to [PiKoder/SSC User's Manual](#) for mode details), you can ensure that a pre-defined status is warranted (e.g. motors shut off).



The image shows a settings menu titled "Other Settings" with a small red car icon. It contains seven settings, each with a checkbox and a description:

Setting Name	Subtext	Checkbox
Mixing left stick and legacy UI	Mixing left stick	<input type="checkbox"/>
Mixing right stick	Mixing right stick	<input type="checkbox"/>
Timeout until fail safe	given in multiples of 0.1 s	
Neutralize left direction stick	uncheck to disable for Standard UI	<input checked="" type="checkbox"/>
Neutralize left throttle stick	uncheck to disable for Standard UI	<input checked="" type="checkbox"/>
Neutralize right direction stick	uncheck to disable for Standard UI	<input checked="" type="checkbox"/>
Neutralize right throttle stick	uncheck to disable for Standard UI	<input checked="" type="checkbox"/>

If the neutralized stick box would be checked then the stick will return automatically to the center / neutral position. You can compare this to the mechanical function of the spring pulling the stick back in a traditional transmitter. For some functions it is more convenient though to keep the position of the stick without holding it the whole time such as the trim of the sails in a sailing boat. In these instances you would just have to uncheck the box and the stick will remain in the last position.

Receiver Channel Reference

In this section you associate receiver channels to stick movements or switches.



Receiver Channel Reference

Stick left

left and right movement

Stick left

up and down movement

Stick right

left and right movement

Stick right

up and down movement

LIGHTS switch

assign to channel

AUX1 switch

assign to channel

AUX2 switch

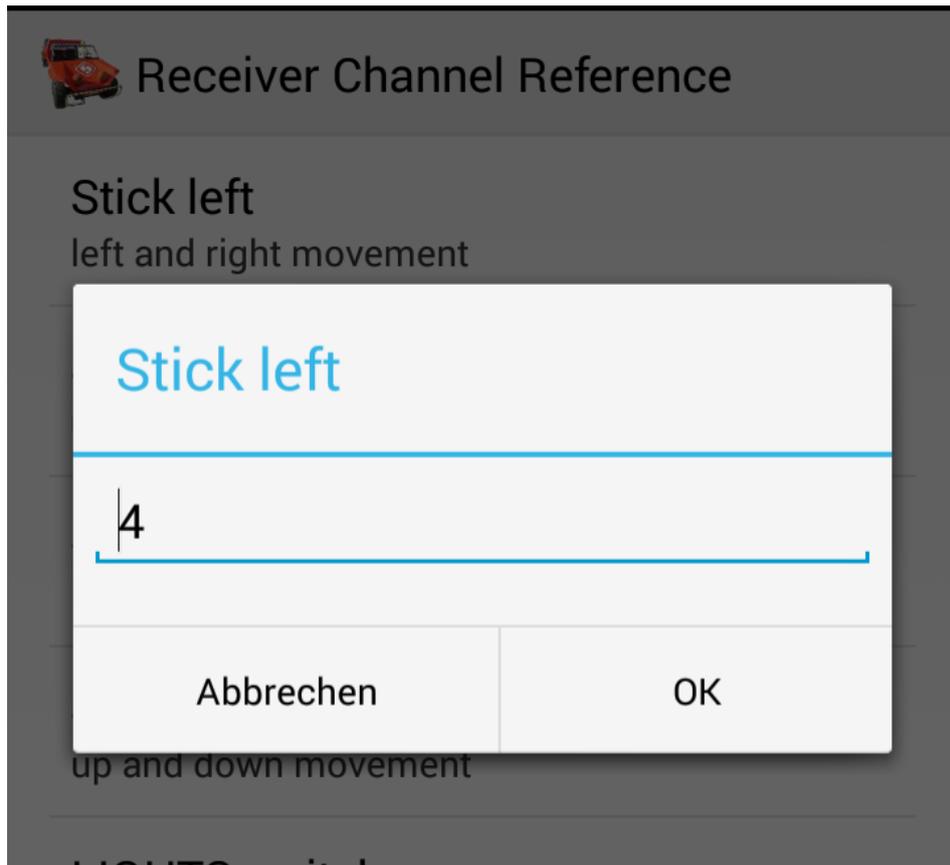
assign to channel

AUX3 switch

assign to channel



When you select an element you will be offered another window to enter the respective channel number you want to associate.



The same mechanism is implemented for the legacy user interfaces.

Transmitter Layout

This preference activates the two additional sliders by taking away two switches (channel 7 and 8). The activation is simply by checking the box.

