

**PIKO**  
SMARTCONTROL

PIKO SmartControl® –  
the digital future of  
model train control!



**USER MANUAL**

Versions SC V1.1.0, SB V4.1.3





# PIKO SmartControl® System

## User Manual

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## 1. Introduction

Thank you for choosing the new PIKO SmartControl® System!

Congratulations for making this decision! You are one of the first as we are ushering in a new era of digital train control.

The constant development of model trains and model train control required a completely new approach to digital train control. Therefore PIKO, as one of the very first model train companies, decided to introduce a novel system that really is easy to use and yet is still capable of handling complex train control scenarios.

This is made possible by the combination of a powerful Smartphone ("simply brilliant") with proven analog controls like the speed dial and the physical buttons placed on the sides of the device: Simply brilliant + brilliantly simple = simply brilliant -> PIKO SmartControl® System.

We hope the new system gives everyone the ability to control his or her model trains in a simple and intuitive fashion – just start playing and try it yourself!

We wish you lots of satisfaction  
Your PIKO Team

## PIKO SmartControl® – the digital future of model train control

### Simply brilliant – brilliantly simple

Station announcements, lights, motor sounds, conductors whistle – with real life-like effects model train layouts become more and more realistic. Controlling such a layout should be user friendly and should not require constantly looking at displays or digital central stations. The new PIKO SmartControl® System is the perfect choice for model train enthusiasts who want a modern and simple digital control system.

It can be used for **H0**, **TT** as well as **N-scale** and with all **track systems** (only using DCC decoders). It combines the advantages of a smartphone-control with the special requirements of the model train hobby.



## 2. System description

### The mobile controller – PIKO SmartControl®

The wireless PIKO SmartController® gives you the ability to select and control trains, switches and signals just by touching the high-resolution display with your fingertip.

Thanks to the Android operating system, the handling is as simple and intuitive as using your smartphone.

Easy to understand symbols directly display the available functions. A big metal knob which you could use with your eyes closed allows for precise speed control. As you switch to another loco it will automatically readjust to the current loco's speed. The mechanics will not be damaged if for any reason the motion of the wheel is blocked.

You can enter names for switches and accessories in the same way you can name locos.

For easy separation of the different items you also can add symbols.

CV-programming and all system configuration can easily be managed with the touch display.

The controller can be easily charged via USB during breaks.

### Notice:

The PIKO SmartController® can only be used in conjunction with the PIKO SmartBox®, that transfers all commands for locos and accessories to the track.

You can use up to 32 PIKO SmartControl® devices with a PIKO SmartBox®.

### PIKO SmartController® technical specification:

- Android OS 4.1.x.
- ARM CPU with >1 GHz clock speed, 512 MB RAM, 2 GB Flash ROM with 512MB available
- 3.2" TFT Display, 800x480 pixel resolution
- capacitive multi-touch panel with softkeys
- powered metal dial with end-stop and micro switch for changing direction
- 2 user customizable function buttons on each side
- USB port for software updates and battery charging
- powerful internal battery with 5 to 8 hours of battery life
- internal battery can be replaced after removing three screws
- 3.5 mm stereo headset port (microphone and headphone)

### Features:

#### Controlling locos

- The internal database can hold more than 16,000 locomotives with individual names, symbols and up to 28 functions per locomotive

#### Switches and accessories

More than 1,000 accessories or switches can be configured and controlled via graphical user interface

#### Consisting

Up to 4 locomotives per consist, the system creates the consist virtually

## 2.1. The new system's brain: the PIKO SmartBox®



The handheld PIKO SmartController® communicates with the PIKO SmartBox® via wireless LAN. The SmartBox® connects to the track to supply both power and digital signals for trains and accessories. The SmartBox®'s integrated 5 A\* booster allows it to power even large layouts without problems (requires PIKO #55046).

Locomotives equipped with RailComPlus decoders will register automatically and will provide their function key icons to the system. Thanks to RailComPlus, decoder settings can be modified on the main. A separate programming track comes in handy when configuring other DCC-compliant decoders without RailComPlus support.

For expanding layouts, additional boosters and occupancy detectors can be connected to the PIKO SmartBox® without difficulty. A PC running model railroad software can be connected to the system via wired or wireless LAN. Multiple PIKO SmartControl® handsets can be used simultaneously with a single PIKO SmartBox®.

If so desired, the PIKO SmartBox® can be integrated into your home network. This will make installing updates especially easy.

All locos with RailCom Plus® supported decoders will be registered automatically with their name, address and available functions. A separate programming track helps to easily setup old decoders. By the help of RailComPlus® it's also possible to modify decoder setups on the main track.

The PIKO SmartBox® communicates with the PIKO SmartControl® over WiFi. The devices will connect automatically. No further setups or downloads have to be done, no further equipment is required: All necessary equipment is already included in the PIKO Premium Train Sets.

### **Notice:**

**By default, all PIKO SmartBoxes use the same WiFi settings. Due to this the WiFi range of two PIKO SmartBoxes cannot overlap unless the WiFi settings on one of the PIKO Smartboxes are changed.**

**Please see chapter "5.3 / additional settings of the PIKO SmartBox® via the settings app" for more information.**

## **PIKO SmartBox® technical specification:**

### **DCC central station with RailComPlus\***

- All DCC modes (14, 28, 128 speed steps, LGB serial), long and short addresses are supported
- Up to 16,384 locomotives can be configured and controlled
- Up to 28 individually assignable functions per locomotive

### **Wireless LAN receiver for the PIKO SmartController® \***

- Supports simultaneous use of up to 32 wireless PIKO SmartController®
- Standalone mode: The PIKO SmartBox® will create a wireless network for the controllers, no internet access
- Access point: The PIKO SmartBox® connects to your home network
- WLAN module for connecting to all common WLAN access points
- Compliant with all relevant IEEE WLAN standards. Suitable for use in America and Europe

### **Ethernet-Port\***

- Connection to home network via computer for using model railroad software

### **Integrated main track booster, up to 5 A\* output (adjustable)**

- suitable for N, TT and H0 scale
- \* requires PIKO #55046. The standard power supply provides an output of 2,25A / 16V.

### **“ECoSlink” port**

- connection of ESU compatible boosters possible
- connection of boosters with CDE interface via the CD(E)-adapter PIKO #55043

### **Integrated programming track output for decoder programming**

- full support of all DCC service mode commands
- import of all decoders used by PIKO to date (excludes old AnDi decoders!)
- import of locomotives possible

### **Loconet-T extension port\*\***

- wired controllers
- occupancy detectors

\*\*Please note: This function will follow per Update.

### **Power supply**

- DC 5.5 mm / 2.1 mm socket for external regulated DC power supply
- low voltage monitoring and auto shut-off

\* a detailed explanation of the terms used above can be found at the end of the manual

## 2.2. PIKO SmartController®



### Hardware

- 1 On / Off switch (top right)
- 2 Analog controller, motor-powered and with end-switch (top center)
- 3 Display
- 4 STOP-button (above display, right side, „Pause“-Symbol)
- 5 Status-LED (above display left)
- 6 Four function buttons (right and left side, each 2x; top right button is assigned to “STOP/II”)
- 7 3.5mm stereo headset port (below display left) for headset
- 8 Mini-USB-port (below display right) for PC connection (update / data) or charging
- 9 Lanyard-hook (centered below display)

**The four function buttons on the sides** are programmable, each can be assigned to a specific function.

For more details about setting up the function buttons see [“Getting started”](#)

**The motorized analog dial** automatically adjusts to the current speed of the loco when setting the speed on the display, taking over control of a loco or when changing direction.

### „Stop / II“-button

The STOP-button is something like a panic switch for the PIKO SmartControl® system.

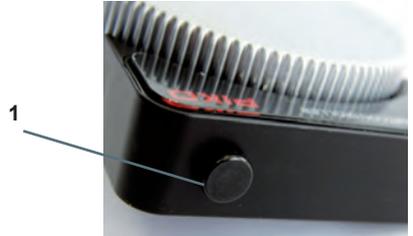
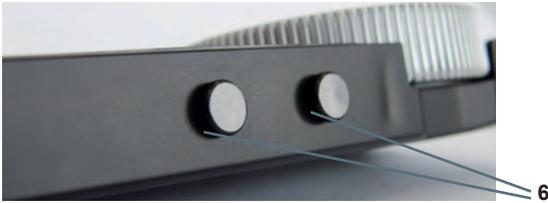
Depending on the delay setting, the button will react immediately or after holding for 0.5 seconds.

Power to the layout will be cut and the status-led switches from green to red. To restart the system just press the button again.

Please note that the PIKO SmartBox® saves all state before the emergency power-off, as soon as you restart the system all locos will start driving again and switches as well as accessories will keep their prior position.

The status-led can also switch to red if you choose the option „act as main controller.“ In case the connection between the PIKO SmartBox® and the PIKO SmartControl® is lost the system will do an emergency power-off.

More details can be found under [“Getting started”](#)



**The status-LED (5)** signals the current state of your system. If the LED is green you can control and steer as you like. If the LED is red the PIKO SmartBox® either detected a short circuit or you triggered an emergency-stop.



**Hardware-buttons**

- Left: Menu
- Center: Home (to get to the home screen)
- Right: Back



### Attaching the Lanyard

In case you need free hands while playing, each PIKO SmartControl® comes with a lanyard. You can easily fit it to the desired hook of the PIKO SmartControl® and carry the SmartControl® around your neck.

Your hands will be free and an accidental drop will be avoided.

**A short description how to attach the lanyard can be found at the end of the manual.**

### Information about the Android operating system

You may already be familiar with Google's "Android" operating system from your personal smartphone. Getting used to the system will be easy, as the PIKO SmartControl® app can be used just like any other Android-app.

For those of you who never have used a smartphone before – don't be afraid! You can't make any big mistakes, most importantly, you can't damage anything!

**We provide a simple and easy to understand introduction in how to setup your devices in the section "Getting started".**

See "Short introduction to Google's Android operating system" at the end of the manual if you want to learn more about Google's Android operating system.

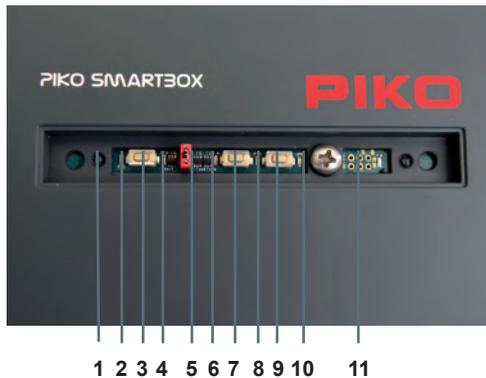
## 2.3 PIKO SmartBox®



## Hardware

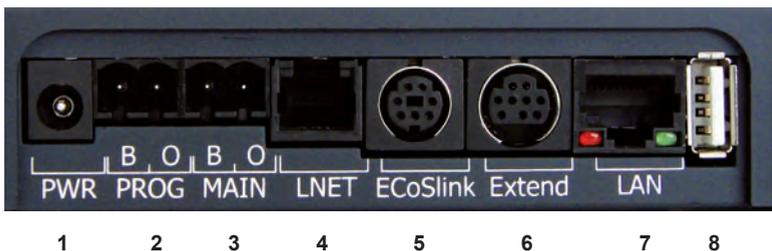
**top:** (each from left to right)

- 1 status LED for WPS connection (WiFi connection via “Push Button Method”)
- 2 button for WPS connection
- 3 status LED for active connection between PIKO SmartBox® and PIKO SmartControl®-app (lights up when PIKO SmartControl® app is active and connected to the PIKO SmartBox®)
- 4 jumper (WiFi on/off)
- 5 status LED for track power (blinks on startup and permanently on when system is on)
- 6 button for reset / backup
- 7 status LED for reset / backup
- 8 button for rescue / update
- 9 status LED for rescue / update
- 10 crosshead screw for removing upper part of the PIKO SmartBox® housing
- 11 status LED for power status (lights permanently on when connected to power)



**Backside:** (from left to right):

- 1 5.5 mm socket for power supply
- 2 track-out for „programming track“
- 3 track-out for „main track“
- 4 LNET (Loconet) –socket
- 5 ECoSlink-socket CD(E)-adapter connection
- 6 Extend-socket
- 7 LAN-socket
- 8 USB-socket



## Connections

### Power supply (1)

Hook-up for external power supply

### Track-out „programming track“ (2)

Connect the optional programming track here.

### Track-out „main track“(3)

This is where the main tracks of your layout will be connected.

### LocoNet / LNet-socket (4)\*

LocoNet interface. You can connect LocoNet components. This can also be used for connecting a computer to control your layout.

\*Please note: This function will follow per Update.

### ESU-compatible sockets (5,6)

„ECoSlink“-socket: ECoSLink bus. You can connect your PIKO SmartBox® with an ESU ECoS command station. This socket can also be connected to the PIKO CD(E)-adapter #55043

„Extend“-socket: here you can connect additional ESU-compatible components.

### LAN-socket (7)

Ethernet interface for connecting to a local network.

### USB-socket (8)

USB interface can be used for PIKO SmartBox® system updates and to store and load BackUp files  
More details can be found in “Update and Reset of the PIKO SmartBox®”

## Notice about PIKO SmartBox®

### Network settings

The PIKO SmartBox®'s network settings are not customizable. It will always use the default settings when connecting to a network. In the interest of functional security and reliability we do not provide an user interface to adjust network settings.

More details on how to connect your system to a network can be found in „Options and settings of the PIKO SmartControl® System“.

### Update of the PIKO SmartBox® firmware

Updates will be easily applied from an USB-stick.

More details can be found in “Update and Reset of the PIKO SmartBox®”

### 3. Getting started

#### System setup

Before you start your new PIKO SmartControl® System please ensure that following things are done:

- Ensure a safe set-up of your layout. This includes properly assembled track without buckle, bends or kinks. Ensure that all track-connectors are fit securely. Secure the track with nails or screws. Depending on the total length of track expansion joints might be required.
- Power feeders should be added roughly every 6 feet, to avoid voltage drops and ensure a clean digital signal
- It is necessary to operate the track and the accessories on separate circuits. Accessories may otherwise interfere with the digital signal.
- Avoid any short circuits from damaged wires, bad insulation, damaged electronics or pieces of metal on the track (e.g. screws or nails). Please take the time to double check this. It will save you a lot of time later, in case there is a problem!
- Choose a proper and safe place to mount the PIKO SmartBox®. This position should meet the following requirements:
  - all connected wires should be fixed without pulling-force
  - the PIKO SmartBox® is protected against hard vibrations, getting hit or kicked (it contains very sensitive electronics!)
  - there is no interference with the WLAN signal (e.g. do not place the SmartBox® into a metal housing)
  - there is enough space around the PIKO SmartBox® for you to reach it
  - the PIKO SmartBox® is in a dry place and protected against direct sunlight
  - the integrated fan is not covered (seen from top: right side) and a sufficient air circulation is possible

### 3.1 Installing the PIKO SmartBox®

If you like to, you can permanently mount your PIKO SmartBox® after choosing a place that fulfills the aforementioned requirements.

Remove the small cover plate on top of the unit (using your fingernails) and remove the crosshead screw underneath.

After the screw has been removed you can lift the upper part of the housing.



Next carefully remove the mainboard of the PIKO SmartBox® by lifting it up. The best way to do that is to use the two handling areas on the left and right side.

Please take care for the fan which is placed in the bottom part of the PIKO SmartBox® housing. It has a loose fit, so you easily can pull it out without any use of force.

Now place the mainboard carefully onto a soft and non-conductive surface, such as a plastic plate.

After that you can see two holes on the bottom which can be used to fix the lower housing to a table.



**Attention!** To avoid any possibility of short circuits cover the screw heads with electrical tape.

Reassemble in reverse order. Please take care not to bend or damage anything.

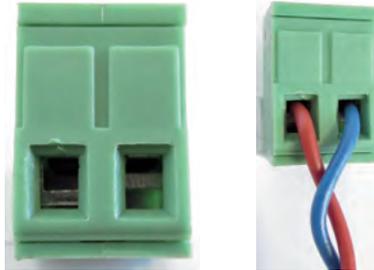
Any use of force should be avoided, otherwise the highly sensitive electronics may be damaged.

### Connecting your PIKO SmartBox® to the track

After making sure that your layout is setup according to above mentioned criteria you can connect the Piko SmartBox® to the track. You begin by connecting the wires to the the terminal / socket-connector.

#### Terminal / Socket Connector

Before inserting the wire, please open the terminal screws a little bit (see left picture, left side opened).



Open the screws until the wire will fit.

The wire ends should be tin-plated ca. 5mm. If you have no soldering iron on hand you can twist the wire ends instead.

Now insert the wires and tighten the screws. Please make sure that the insulation is not pushed into the holes, otherwise contact problems may occur.

You will have the choice where to connect your track.

Please connect your layout to "MAIN". If you have a separate programming track you can connect it to "PROG" with another socket terminal.

With a programming track in place you can control your layout and program decoders in parallel.





The PIKO SmartBox® also supports the POM-function\* (Programming On the Main). It is possible to read a locomotive's address directly on the maintrack in the "DCC address" menu. It's also possible to change the address this way.

\*This function requires decoders with RailCom® support

#### **Notice:**

Please make sure you insert the socket-terminals the right way up. They won't fit otherwise!

#### **Connecting additional components to the PIKO SmartBox®**

Depending on the size of your layout you might want to connect your accessories and other components to the SmartBox® prior to powering it up for the first time.

Additional information about the different features can be found under „options and settings of the PIKO SmartControl® System“.

#### **Connecting the PIKO SmartBox® to the power supply**

Once everything above is in place you can connect your PIKO SmartBox® to the power supply.

Just insert the 5.5mm terminal of the power supply into the socket on the back of the PIKO SmartBox® (socket "PWR"). The PIKO SmartBox® will start automatically and setup a local Wi-Fi network, to connect with the PIKO SmartControl®.

**Notice:** If no LAN-wire is connected and WPS is not activated, the PIKO SmartBox® will create a local wireless network exclusively for the PIKO SmartController®. An internet connection is not available in this configuration.

#### **PIKO SmartBox® startup sequence**

After connecting your PIKO SmartBox® to power the following procedure is executed:

1. The power status LED on the right will light up permanently.
2. Shortly after a second green LED and a blue LED will blink for a moment (green LED for track status, blue LED for active connection).
3. The fan inside the PIKO SmartBox® will spin up briefly (as a test).
4. The startup procedure is finished now. The green LED for track status will blink on a one second interval until the system is set to "green" (status "GO" to activate the track power) via the silver letters "STOP / II" or via the function button at the upper right side of the device.

After starting the PIKO SmartControl App the blue LED will be on until the connection is cancelled or lost.

In case of a short circuit the PIKO SmartBox® will cut off the track power and the green LED for track status will blink with a faster frequency than before.

## 3.2 First Start of the PIKO SmartControl® System

### Activating the PIKO SmartController®

Turn on your device by holding the power-button for ca. 2 seconds. As soon as the status-LED is blinking you can release the button. The device will boot for the first start now (this may take up to one minute).

After the device has finished booting you will be automatically redirected to the Android home screen. The home screen is the equivalent of the desktop on your computer.



Before you start playing we recommend you to take some time to setup your device.

## Setting up the device

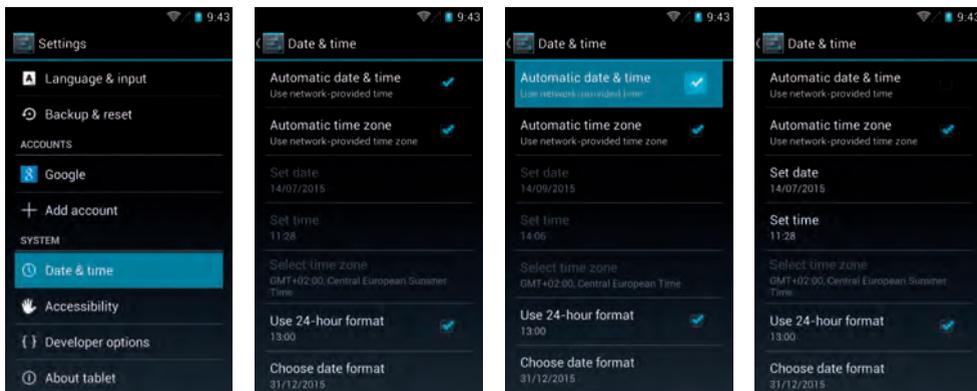
### (Android-setup) Setup Date and time

To set the date and time on your device, please go to the main menu (press the  on home screen and enter settings).

Then enter “Date and Time” in the column “System”.

To enter the time manually, please press “Automatic time zone / Use network-provided time zone” to remove the check mark. Now the functions “set date” and “set time” are available.

If you are already planning on connecting your device to the internet you can skip this step. Your device will automatically download the current date and time from the internet.



### Wi-Fi-settings

By default, the PIKO SmartController and the PIKO SmartBox® are setup to automatically connect to each other.

This even is the case when there is no WiFi activated in the PIKO SmartController yet.

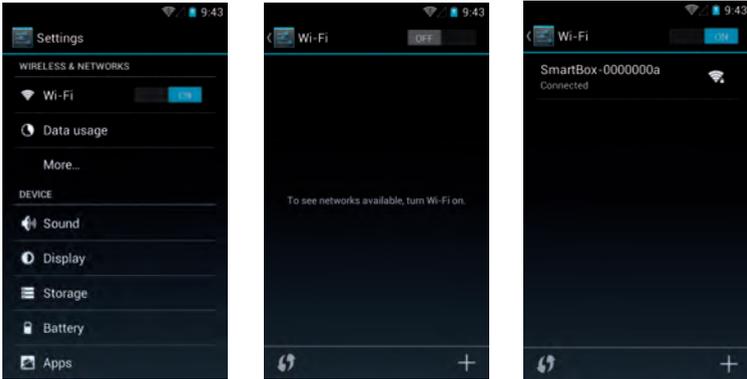
Starting with app version 1.1.0 the PIKO SmartControl app will check if WiFi is activated. In case it's not activated it will be switched on automatically. The PIKO SmartBox® must be connected to power to enable a WiFi.

(default settings: WiFi name / SSID: “SmartBox” , password: “123456789” )

## Wi-Fi-settings

To ensure that your PIKO SmartControl® will properly connect with your PIKO SmartBox® check the Wi-Fi settings first.

Please go to the main menu  and enter “settings”. Press on the letters “Wi-Fi” (notice: please press on left side; pressing the right side will activate / deactivate the Wi-Fi; the button should show “ON”). On the next screen you will see an overview of the Wi-Fi-networks available in your area.



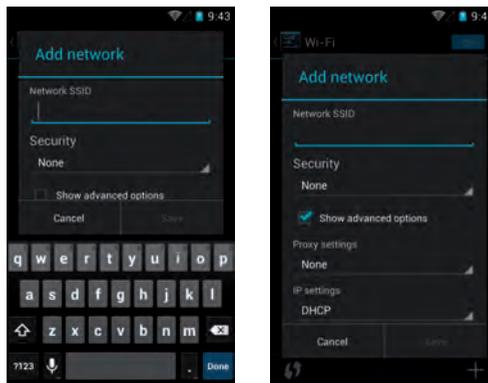
If your PIKO SmartBox® is already powered on you will see it here.

The standard name is “SmartBox”. This is the local Wi-Fi network created by your PIKO SmartBox®.

## More settings / options:

You also can connect your PIKO SmartControl® with other Wi-Fi networks (symbol „plus“ or directly select from available networks).

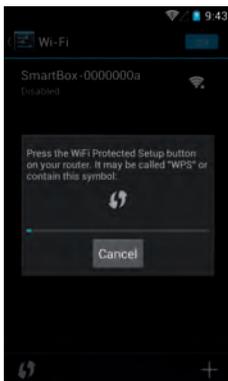
Simply enter the Wi-Fi key like you would on any other device. When doing this, the connection to the PIKO SmartBox® will be deactivated.



## WiFi connection using WPS / “push-button-method”

Alternatively, you can connect the devices using WPS (WiFi protected setup)

Just press the WiFi-symbol on the screen  and on your router (if available). Both devices will connect automatically, you do not need to enter a password.



### Please note:

If the PIKO SmartControl® is not connected to the PIKO SmartBox® you cannot control your layout / track. To control your layout again you have to reconnect the PIKO SmartControl® with the PIKO SmartBox®. Just repeat the steps above in the WiFi menu to reconnect.

To avoid switching connections you can connect the PIKO SmartBox® to your home network by using the LAN-socket on the back of the unit.

**More details about this can be found under “link the PIKO SmartBox® into a local network”.**

When first connected to the internet your device will download several updates. Some updates can be selected by the user. Other updates are required for the operating system.

While downloading these updates your device might have a delayed reaction, as it is processing a lot of data.

If the small arrows in the WiFi-symbol (status bar on top) stop blinking the updates may be finished



## Setting up a Google®-Account erstellen (internet connection necessary)

To enjoy the complete functionality of your device you will need a Google®-account.

We suggest you open the Google® PlayStore. During the first start you will be asked to create an account. Just follow the instructions on the screen and finish the login.

An active internet connection must be available.

If you already have a valid Google account, you can use it to login.

We strongly recommend you to note down your account name and password for later use.

After successful setup of your account your device will start to look for updates. We suggest you wait for ca. 15minutes (depends on your connection speed).

As soon as this process is finished your PIKO SmartControl® is ready to play!

### **Security notice: Android with internet connection**

We suggest that you do not use your device for safety/security relevant actions on the internet, like online banking.

If you still wish to do that it is your own responsibility to install anti virus software or similar protection measures.

**Please note: The safety of your information is your own responsibility!**

### **Battery charging**

You can easily charge your PIKO SmartControl® via the mini USB socket.

There are multiple options:

- use the included power supply with USB wire
- use the USB wire of the included charger and connect it with a USB socket on your computer
- use the USB socket of the PIKO SmartBox®

As the USB socket is standardized, it is possible to connect the PIKO SmartControl® to any other USB socket equipped device.

Due to technical limitations you may encounter some inaccuracy of the touch-display during charging.

### **Notice:**

If you charge your PIKO SmartControl® while it is turned off, you will see a battery graphic for charging only.

If you want to power on your device in this state you need to push the ON/OFF-button for around 5 seconds, until the display shows the small Android-icon.

Otherwise you will just see the charging status.

## 4. PIKO SmartControl® App

With the help of the PIKO SmartControl® App you will be able to easily control everything on your layout. Once you studied the feature overview on the following few pages it is time to play!!

### Starting the PIKO SmartControl® App

Google's Android system offers the option to start applications from different locations.

The simplest way is to touch the Application on the home screen, where you will arrive after the system finished booting.

You will also find the app in the main menu. This is the main link, that cannot be removed. All other links, like those on the home screen, can be deleted or moved to other positions.

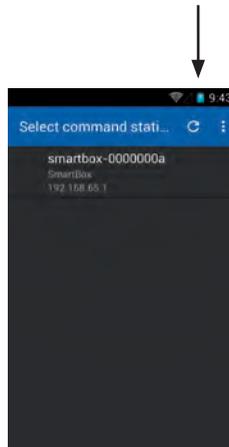
More information about those functions can be found in chapter „more detailed tips for the PIKO SmartControl® App“.

### Choosing a command station / setting up a connection between PIKO SmartControl® and PIKO SmartBox®

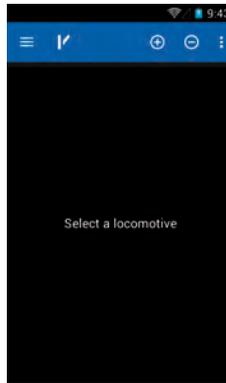
When starting the PIKO SmartControl® app for the first time the system will automatically try to connect with the PIKO SmartBox®. In case there are two or more PIKO SmartBoxes® in range\*, the app will ask you to choose one.

\*in this case only one PIKO SmartBox® can remain in factory default settings. All other PIKO SmartBoxes® need to use a different WiFi-Name (SSID).

If no connection is available or if the connection fails, please check your WiFi settings (The WiFi-symbol on the PIKO SmartControl® status bar must be visible)



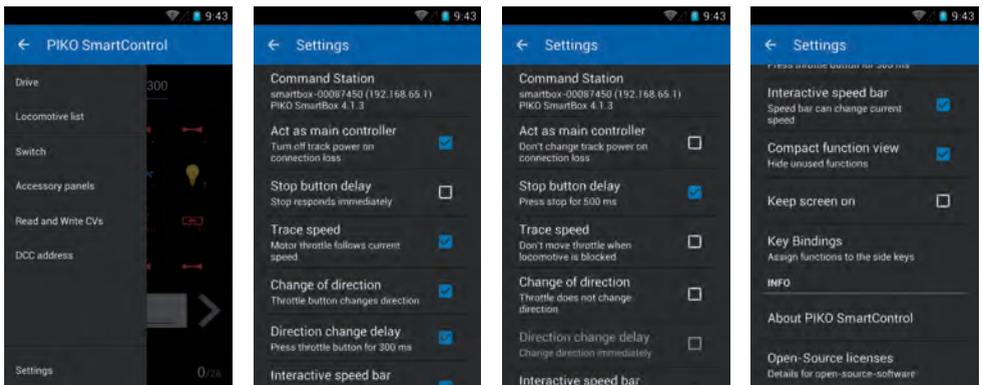
After a successful connection you will see this screen:



## 4.1. Overview of features

### 4.1.1 Settings

Via the Menu button you can access „Settings“. The following options can be found there:



\* Please note the change of the text when activating / deactivating any function.

### Select command station

Here you can see all available PIKO SmartBoxes. Usually there will be only one choice here. Please check your WiFi settings in case the list is empty.

### Act as main controller

This is a safety feature. It allows you to choose how the system reacts when the connection between PIKO SmartBox® and PIKO SmartControl® is lost.

If you activate this option and the connection is lost, the PIKO SmartBox® will switch to emergency stop.

To reactivate your system just press “STOP” again to switch back to normal mode (LED will turn to green).

If this option is not activated nothing will happen after a connection loss. The last information and settings will be stored by the PIKO SmartBox® and the layout will go on like nothing happened.

**\*a connection loss is defined as a unwilling loss of WiFi connection between PIKO SmartBox® and PIKO SmartControl® in this case.**

### Stop button delay

As the STOP-button is very close to the analog knob you may happen to touch this button unwillingly thus causing an emergency stop on your layout.

To reduce the sensitivity this option allows you to add a 0.5s trigger delay for this button.

Instead of just touching you now will have to keep the button pressed for 0.5s.

To reactivate the system, just press the STOP-button again for 0.5s.

### Trace speed

This option is for the motorized function of the speed dial.

When you are using several locos you can choose whether the speed dial should jump to the current speed of the selected loco or if it should do nothing.

### Change of direction

You can choose whether to change the driving direction with the silver dial and the arrows on the display, or with the arrows only.

### Direction change delay

Here you can choose if a direction change will be made immediately or if you need to press 300ms against the left end-switch.

### Interactive speed bar

Choose if you want to change the speed with the silver knob only or with the dial and the speed bar in the display.

### Compact function view

If this option is activated the system will only show 12 functions per loco or for RailComPlus equipped locomotives the available functions as reported by the loco's decoder.

If this option is deactivated the system will always show 28 functions, if they are available or not.

Please note that you can also add more functions to a loco, even if the function is activated. This can be done by manually editing a loco.

### Don't lock screen

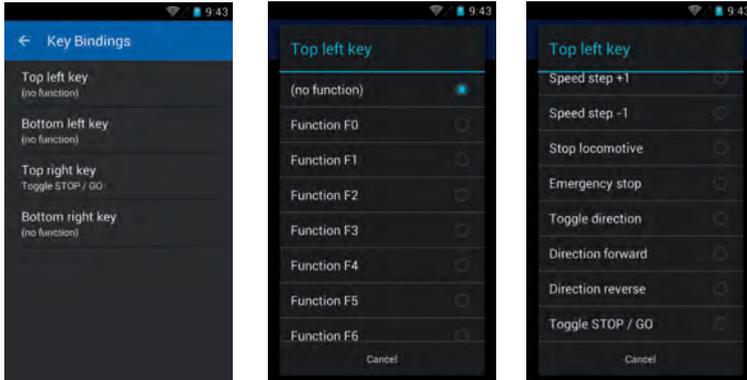
This function replaces the system's „display timeout“ that is stored in the Android system (time before the display will be switched off automatically).

If this function is activated your PIKO SmartControl® will not turn off it's display as long as the app is activ. Please note that this will reduce battery life.

## Key Bindings

Here you have the option to assign functions to the four buttons along both sides of the PIKO SmartControl®.

You can choose from all 28 functions, change driving steps or direction, do an emergency stop or choose to add no function.



## About PIKO SmartControl®

Here you can find information about which version of the application is installed on your device. Please check our webpage for updates frequently!

## Open-Source-Licenses

Here you can find license information for the included software.

### 4.1.2 Main-pages of the PIKO SmartControl® app

#### The control panel

This is the center of your PIKO SmartControl® app. From here you can control all locos, edit them, create new ones or delete existing ones. Speed and functions can be changed with one touch as well.

#### The switch panel

Here you can create switch panels from all types of accessories or magnetic accessories.

#### Read and Write CV's (via menu button)

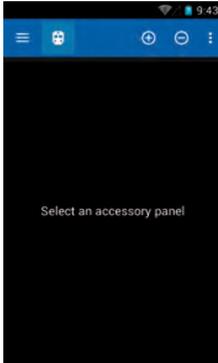
As with any other digital command station you can read and write CV's here.

To get more information what CV's to program and appropriate values see your decoder's instructions. Please note that programming uses the "PROG"-connection of the PIKO SmartBox®.

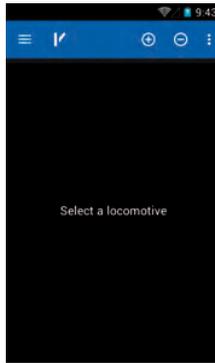
### 4.1.3 Overview of features

#### Switching between different menus

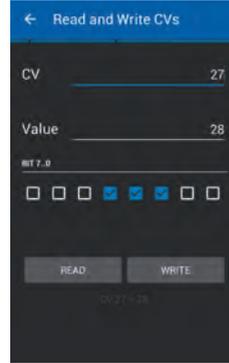
The control panel and switch panel can be accessed by touching the relevant symbols in the menu bar on top of the screen (loco symbol = control panel / switch symbol = switch panel).



Switch Panel



Control Panel



CV-Programming

Via the Main-Menu button  you can access „settings“, as well.

The hardware menu button (below display) and the three little dots (display top right) will show you the available options for the different panels.

In the control panel for example these are „create loco“, „edit loco“, „create consist“ and „settings“.

#### Switching within a menu

Within a main-menu you easily can switch between different pages by swiping over the display.

You can also touch a name to switch to that side. Active items are underlined, non active items are not underlined or are colored in light grey.

In the control panel you can switch between locos, in the switch panel between different panels.

#### More functions and symbols

In a menu you can easily add or remove locos or other items using the buttons „plus“ and „minus“.

When pressing „minus“ an item will be removed from the overview.

When pressing „plus“ you will be forwarded to another menu where you can choose a stored item or create a new one.

## 4.2 The control panel

This is the revolutionary feature of the PIKO SmartControl® System:

By a simple touch with a finger you can easily activate functions, switch between different locos, change the speed, see the names and the actual state of the functions, program, edit, switch to accessories and much more!

The intuitive nature of the Google Android operating system and the easily recognizable function symbols make it possible to control a model railroad layout in the simplest and intuitive way.

### Symbols

- 1 Main Menu button top left
- 2 Switch panel symbol top left, switch
- 3 „Plus“-Symbol
- 4 „Minus“-Symbol
- 5 Menu button top right
- 6 Control panel / loco overview (active loco is underlined)
- 7 Available functions of a loco
- 8 Loco picture and driving direction
- 9 Current speed (driving Steps)
- 10 Loco address (square brackets bottom left)
- 11 DCC format (next to square bracket)



### Basic function

Simply brilliant – brilliantly simple! This is the slogan of the new PIKO SmartControl® System.

And now you can experience that, too: Choose a loco, change the speed or activate any functions – simply by touching the display.

If you decided to buy one of the PIKO Premium Train Sets you just need to put a loco on the track, confirm the automatic RailComPlus registration and you can experience how simple it can be to control a digital layout. Just try it!

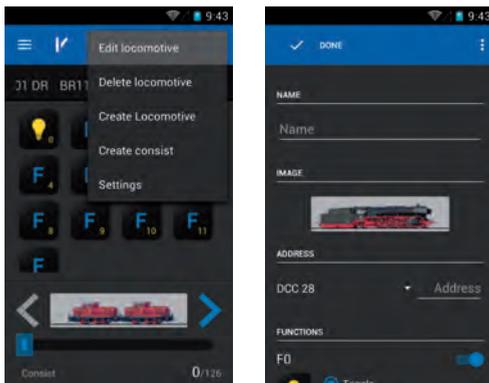
## Additional menus in the control panel

You can access more options via the hardware menu-button or with  :

### 4.2.1 Edit locomotive

Here you can edit the currently selected loco from the control panel.

You can change the name, the loco's picture/symbol, the address and the available functions.



To change the name touch the line below „name“. The Android keyboard will show up and you can edit the name.

Once you entered the name you can touch a free area on the display (not the keyboard) or use the hardware back button to remove the keyboard.

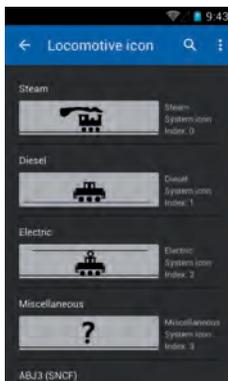
If you want to enter the address right after entering the name you can use the “next” button of the keyboard (blue, bottom right). The cursor will be redirected to the address field automatically.

Please pay attention to the cursor-position, it may be in front of the number or behind it.

### Change locomotive picture

In order to change a locomotive's picture just touch the current picture in this menu.

An overview of all available pictures will open. Here you can choose your desired picture. Just select the picture you want to use.



For the available functions you can configure the following:

- The symbol – just touch it to change it
- The way the function will operate: **permanent, momentary or inverted**

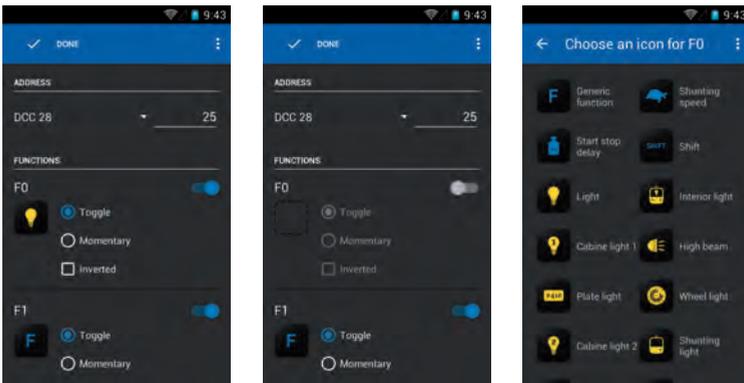
A **permanent** function will remain active after touching it once.

A **momentary** function will only remain active as long as the button is pressed.

**Inverted** functions are on by default. That means, if a permanent function is marked with “inverted” it will remain activated until the button is touched once. It will be off as long as the button is touched.

### Activate / deactivate a function

The blue slide-button next to a function can activate or deactivate this function. If the function is off, the button will be grey. In this situation the function will not be shown in the control panel, unless you changed some options in the settings menu.



### Function symbols

You can choose a suitable icon for each function. Just touch the function symbol („F”) and a list with all available icons will open up.

### Notice:

Please note that all changes will be stored automatically if you leave this menu with the back button, except if you choose “discard changes” with the -button. So please take care when changing any setups!

#### 4.2.2 Create new locomotive

This menu is similar to „edit locomotive“. You can use the preset settings for the new loco, you only have to enter a name and an address for the loco (so that it can be clearly identified in the control panel). Once you finished editing you will be automatically redirected to the control panel with the newly created locomotive active.

**Notice:**

Locomotives which connected automatically via RailComPlus don't need to be edited manually. Usually they will tell the command station their name, address and functions.



**Notice about address conflicts:**

There can only be one locomotive stored in the system using the address “3” and “1000”. These are the starting address for factory default (“3”) and for RailComPlus (“1000”).



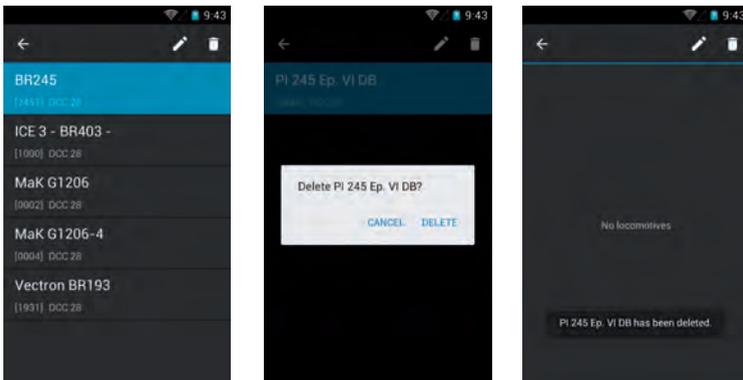
### Control panel – „plus“ and „minus“ symbols

On top of the control panel are the “plus” and “minus” buttons. They will add or remove locos in the control panel.

By pressing „minus“ a currently selected and underlined loco will be removed from the control panel. By pressing “plus” you will be redirected to a list of currently available locomotives. If you touch a loco in this menu it will be automatically added to the control panel and set as currently active locomotive. In the locomotive list you also can easily create a new locomotive. Just touch the menu-button in the top right corner and choose “create locomotive”, which will redirect you to the “create locomotive” menu.

### Notice:

The locomotive list also provides the built-in Android system menu. If you press on a locomotive for a little bit longer the status bar on top will change. It will show the options “back” (arrow left), “edit” (pencil) and “delete” (trash bin). You can leave the menu with the hardware back-button.



When touching „edit“ you will be redirected to the „edit locomotive“ menu. If you want to delete an item, you will be asked to confirm.

### If item is deleted:

After an item is deleted you will remain in the current menu. To get back to the control panel or another menu you have to touch the „back-arrow“ or the hardware back-button first.

### 4.2.3 “create consist”

With the help of this menu you can „virtually“ create consists, including up to four locomotives. After choosing “create consist” you will be redirected to a new menu.

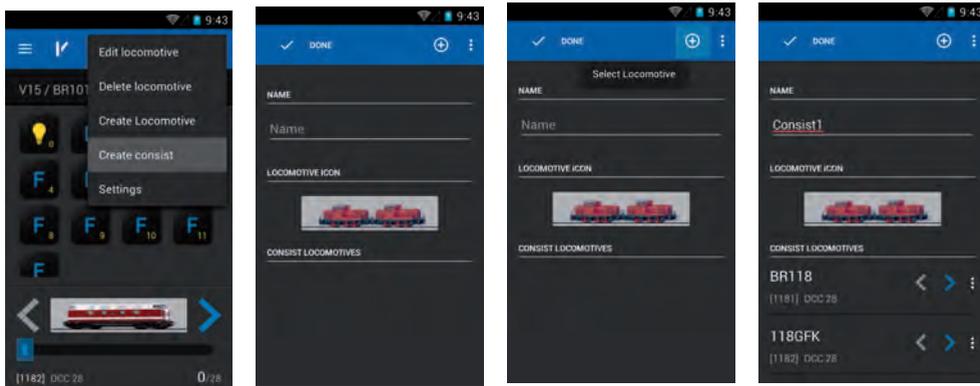
First of all you can enter a name for the new consist. According to the consist-type you also can choose whether it's a diesel, steam or electric consist by touching the picture. It will show you the overview of available locomotive pictures.

To add locos to the consist, please press the “plus”-symbol in the upper right corner of the screen. It will show you the locomotive list where all automatically registered and manually added locomotives are stored.

After adding a locomotive to the consist you can change the driving direction or edit this locomotive again, by pressing the small menu-symbol at the end of the line (behind locomotive name: )

#### Please note:

After adding a locomotive to the consist it will not show up in the locomotive list again when adding a second or third locomotive to this consist.



### 4.2.4 Controlling a locomotive

You can change the speed by turning the analog knob or by moving the speed-bar on the display. No matter how you adjust the speed the analog knob and the display will always stay in synch by either automatically moving the knob or adjusting the display value.

#### Activating functions

Touching a function will activate or deactivate the function.

Depending how the function is configured (momentary / permanent / inverted) the function will remain active or will turn off again once you remove your finger.

#### Change of driving direction

There are two ways you can change the driving direction:

### Changing driving direction via the display:

You change the direction via the left and right arrows on the locomotive's picture independently of the locomotive's current speed. The loco will decelerate, stop, switch direction and accelerate to the same speed as before.

Please take care when doing this, in case the loco might end up pushing cars at high speed. This may cause derailments.

### Changing driving direction via the analog knob:

When using the analog knob, you have to manually stop the loco first. If the loco has stopped just push the knob a little bit into it's end-position. The installed end-switch will "click" and change the direction of travel.

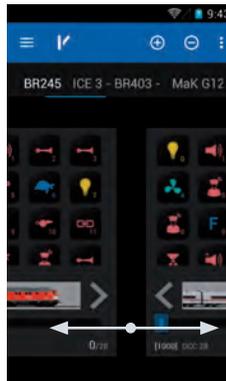
Please note that a very quick "click" may not be recognized by the system. To be sure that the direction has changed look at the locomotive's lights or check the arrows on the display.

## 4.2.5 Switching between locos

If you already have added multiple locomotives to your list, there are multiple ways to switch between them:

### Swiping

Swipe over the display to switch to another loco. Just slide the active loco out of the way to get to the next one.



### Direct selection by tipping the name

If the locomotive's name still can be read on the display you can select it directly (touch the name).

### Select via locomotive list

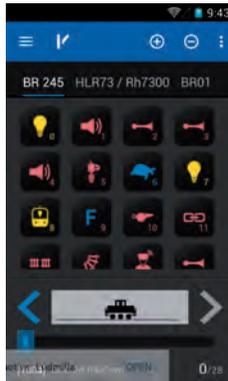
To select locomotives that are either already in the control panel already or only in the locomotive list, you can use the "plus"-symbol to open the locomotive list and select from all available locomotives

### Information about automatic registration via RailComPlus®:

As soon as you place a RailComPlus® locomotive on the track it will automatically register. A notification will be shown on the display in that case. By pressing “open” this locomotive will be added to the control panel as the currently active locomotive.



If you do not wish to use the newly registered RailComPlus® locomotive right away, you can swipe away the RailComPlus® information or just wait for about 10 seconds for it to disappear.



## 4.3 The switch panel

The switch panel allows you to add as many accessories and switches as you want, more than 16,000 in total.

The top menu bar is similar to the control panel, only the switch symbol has changed to a loco symbol. You can toggle back to the control panel by pressing the loco symbol.

### Other menus in the switch panel

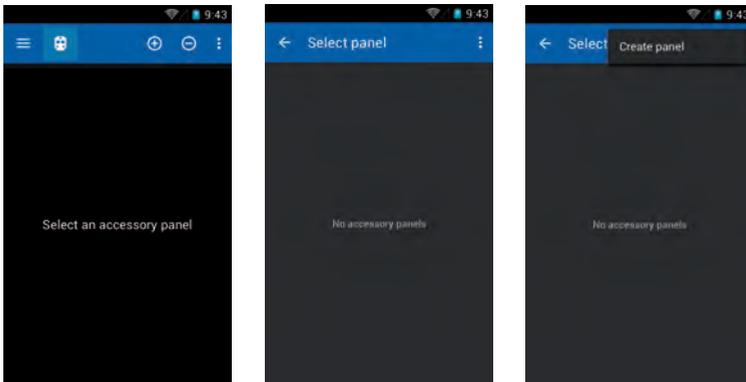
If you go to the switch panel for the first time, you will be asked to select a panel first. As there is none yet you have to create one first.

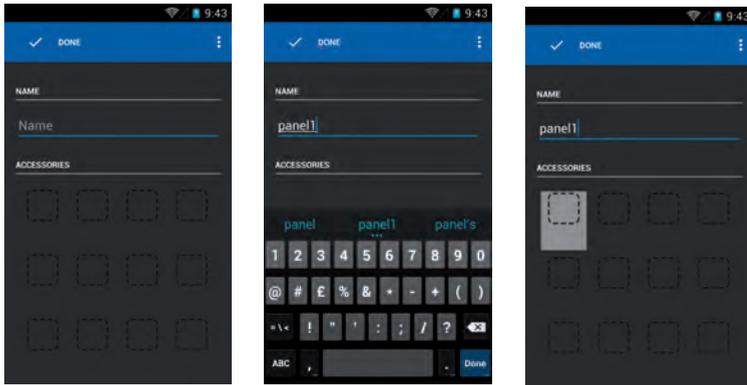
#### 4.3.1 Create new switch panel

On the next screen press the menu-button in the top right corner  or the hardware menu-button below the display  and choose the option “**create new panel**”.

On the next page you can enter a name and choose the items to be added to the panel. At first, please enter a name, e.g. “panel 1”. Confirm this name on the keyboard.

Now touch an empty slot to add an item. As there are no items yet, the next page will be the “items list”.

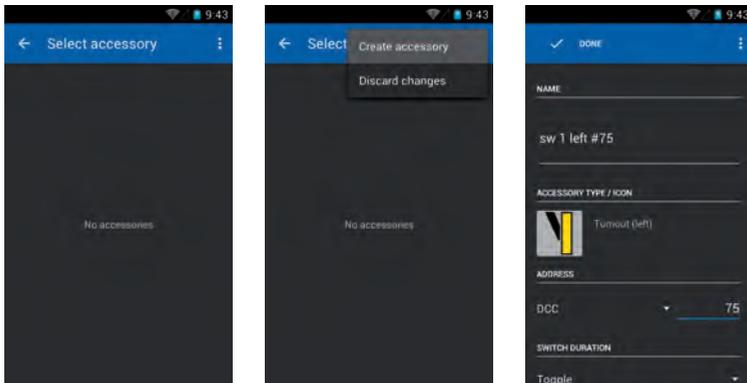




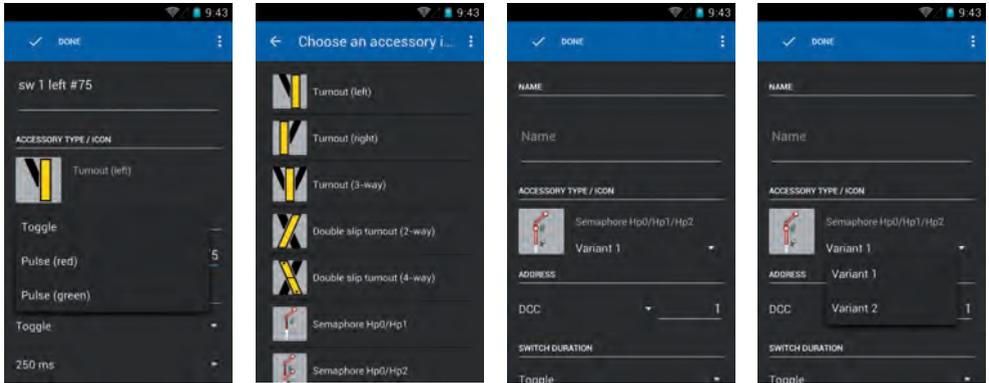
The **”items list“** will show items that you already added to the list.

The items list is stored centrally on the PIKO SmartBox® so you will see the same list on all controllers no matter where an item was added to the list.

To add a new item, touch the menu buttons and choose **”create new item“**.



Similar to the menu “new locomotive” you have to enter a name and an address first. Additionally, you have the choice of different symbols and accessory settings.



After entering a name, use the keyboard-button „next“ to enter the address. Confirm with “done”. Now you can choose a symbol, just by touching it. For some items there are different versions available, e.g. for signals.

In case you want to leave this menu without entering any name, the app will ask you to enter a name. If you want to leave the menu without saving, please press the menu button and choose “discard changes”.

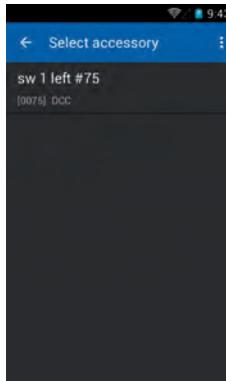
### Notice for accessories: (logical system for addresses)

Items like signals, switches or other accessories which have more than one state require more than one address (for example signals with 6 lamps).

Addresses are assigned as follows:

- enter an address for the base state of the item
- the second condition will be the base address +1. That means if your base address for condition 1 is “10”, the address for the second condition will be “11”
- the third condition will be the base address +2, and so on.

If you choose the option „impuls“ you can specify a duration.



Finish the editing by pressing „done“ on the screen.

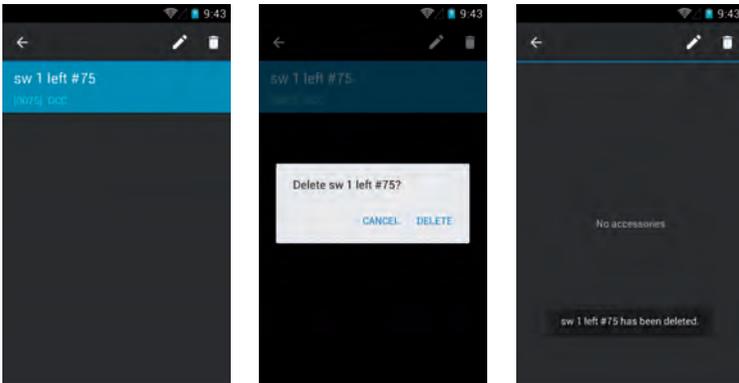
You will be redirected to the items-list.

Now you can add additional items if you wish or choose the actual item to put in the switch panel.

By touching an item, it will be added to the the switch panel in the position you selected earlier.

**Notice for items list:**

Just as the locomotive list the item list provides the standard Android menu. Just press an item a little bit longer and the upper status bar will change. You will have the option to edit or delete items then.

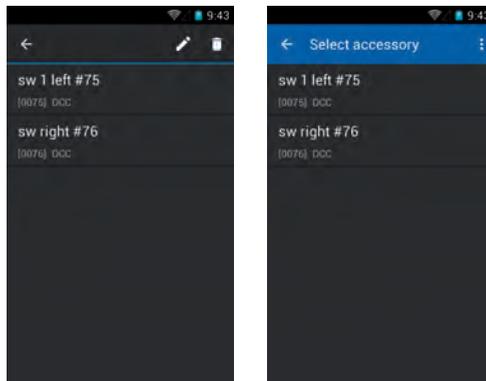


By pressing „back „ (top left arrow) you will get back to the items list.

By pressing “edit “ (pencil) you will be redirected to the “edit item” menu.

If you want to delete an item you will be asked to confirm. After the item is deleted you will return to the menu.

If you want to remove the status bar again, press “back” or use the hardware back-button.

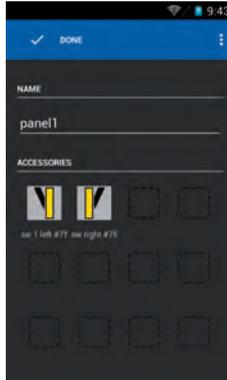


### 4.3.2 Control the switch panel

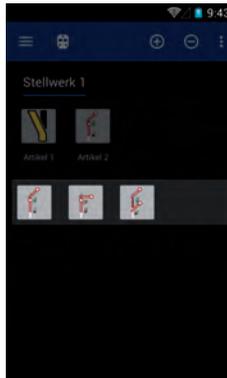
After creating a switch panel, you can easily control your accessories just by touching the related symbol on the screen.

For items that only have two states, the symbol will change immediately.

For items with more than two states you have to select the desired state.



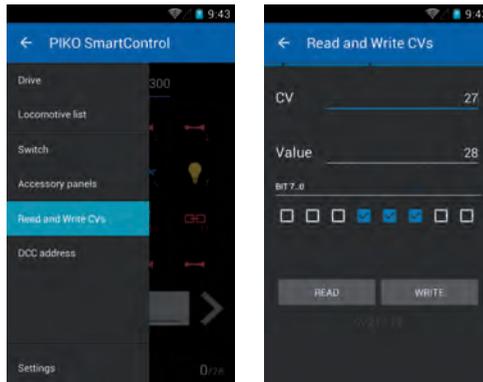
Please remember the accessory address scheme for items with more than two states described above.



## 4.4 Programming

### 4.4.1 Read and write CV's

The screen for decoder programming can be reached with the main menu button . On this screen you can read and write decoder CVs.



#### Read CV's

To read a CV's value you first have to enter the related CV.

Touch the line with the CV and enter the number.

Then remove the keyboard (free area on display or back-button) and press "READ".

The result will be displayed.

While reading CVs in programming mode the locomotive may move a little.

#### 4.4.2 Write CV's

Programming new values is very similar to reading them.

First enter the CV number you want to change.

Confirm on the keyboard with "next" (blue, bottom right) and the cursor will jump to the value entry.

Enter the desired value, confirm with "done" or remove the keyboard by clicking on a free area or by using the back button.

Now press "WRITE" to change the CV.

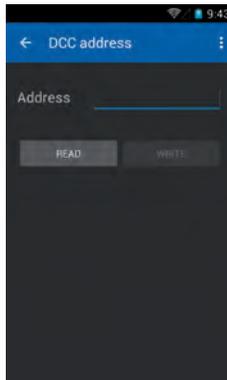
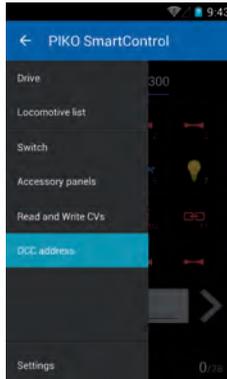
During this process the locomotive may move a little.

### 4.4.3 DCC-Address

With this menu you can read and write long addresses.

The complicated method of entering long addresses with the help of different CV's is not necessary anymore.

The PIKO SartBox will automatically calculate which CV's to modify in order to enter a long address.



## 5. Options and settings of the PIKO SmartControl® System

### 5.1 Link the PIKO SmartBox® into a local network

There are two options for connecting your PIKO SmartBox® to a network: WiFi or LAN.

#### Connection via LAN

The Ethernet-socket of the PIKO SmartBox® is working in DHCP-mode. It will automatically receive an IP-address as soon as you connect your PIKO SmartBox® to the network. It should be able to connect to the internet once it has acquired an IP-address. Please check your network and firewall settings in case it can't connect to the internet.

#### Connection via WiFi

The PIKO SmartBox®'s WiFi interface can operate in two different modes:

- 1) „Servermode / AccessPoint“: The PIKO SmartBox® will create a local WiFi network. The name of this network (SSID) is always „SmartBox“. Additional PIKO SmartController®s can connect to it and will automatically receive an IP-address. If the PIKO SmartBox® is connected to a network via LAN, the PIKO SmartController® can access the internet if the local network has internet access. (default setting: SSID „SmartBox“, password „123456789“)
- 2) „Slave Mode“: In this mode the PIKO SmartBox® will connect to an existing local WiFi network.

#### The basic settings in this mode are:

- the SSID / network name will be „SmartBox“ by default.
- the PIKO SmartBox® has the IP address 192.168.65.1
- Further devices that connect with the PIKO SmartBox® will get IP-addresses between 192.168.65.2 and 192.168.65.254 e.g. the PIKO SmartControllers®)

#### Network settings of the PIKO SmartBox®

Please understand that we do not provide access to additional network settings. Even minor configuration errors in these settings may result in a total loss of connectivity. Please contact our customer service, in case you have any further questions regarding these settings.

#### Notice:

**By default, all PIKO SmartBoxes use the same WiFi settings. Due to this the WiFi range of two PIKO SmartBoxes cannot overlap unless the WiFi settings on one of the PIKO Smartboxes are changed.**

**Please see chapter “5.3 / additional settings of the PIKO SmartBox® via the settings app” for more information.**

## 5.2 Connecting the PIKO SmartController® to a local network

### Connecting to an existing WiFi network

If you already have a router with an internet connection at home you can connect your handheld PIKO SmartController® to the existing network.

Just open the WiFi settings in the main menu. Choose your network, enter the password and voila: You're online!

Now you can enjoy the features of your Android system that you may already be familiar with from your smartphone, such as surfing the internet, downloading apps from Google PlayStore and others. Of course you cannot make calls with the PIKO SmartController®, as it doesn't include a SIM card, though you can use telephone-apps such as Skype.

### Note:

Please protect your personal data while surfing the internet. It is your responsibility to protect your data.

## 5.3 Additional settings of the PIKO SmartBox® via the settings app

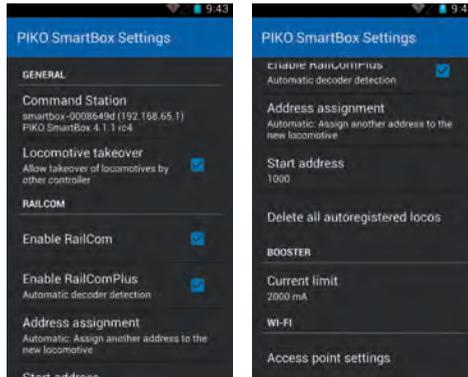


The app „SmartBox® settings“ allows you to configure additional additional settings of your PIKO SmartControl® System. You can find the app in the Android main menu . It has the same symbol as the PIKO SmartControl® App, but with an additional gear icon on it.



After starting the app you will be asked to choose a command station. Similar to the app "PIKO SmartControl" the settings app will automatically try to connect with the PIKO SmartBox. In case there is no PIKO SmartBox® available, nothing can be done here. Start the PIKO SmartBox.

This application offers the following options:

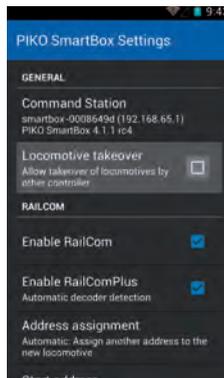


**”Locomotive takeover“**

This option allows you to „steal“ a locomotive from another PIKO SmartControl® controller.

If this option is active, you just need to touch any function of a loco or change the speed to assume control of it.

If the function is not active a locomotive will remain under the control of the original PIKO SmartControl®. On a secondary controller the loco will be marked “only display”, you can only see the status of the loco, but you cannot control it.



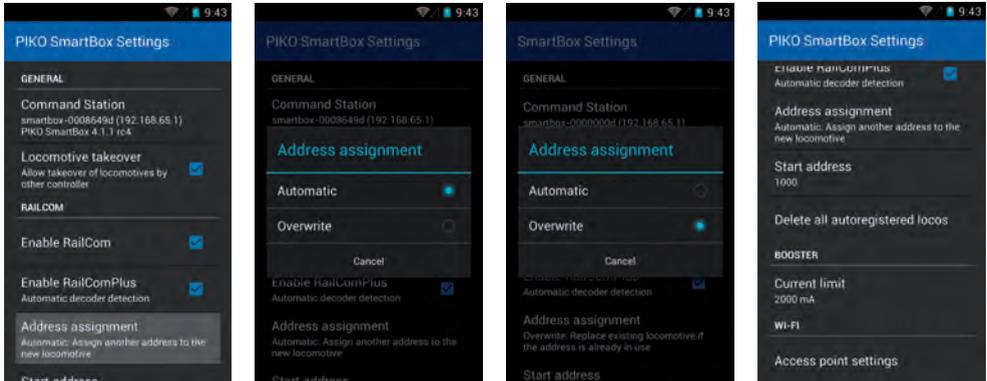
### ”Enable RailCom®“

This option controls whether the RailCom protocol is activated on the PIKO SmartBox®. You can switch it off if you do not own any RailCom equipped decoders. In case that you don't want to switch it off it completely, you can choose to just disable the automatic RailComPlus-registration.

### ”Address assignment“

Here you can decide what should happen if a loco with RailComPlus equipped decoder wants to register with the PIKO SmartBox®.

Please note how the text changes when switching between “automatic” and “rewrite”.

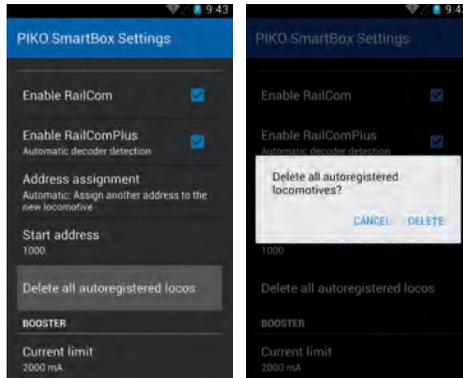


### ”Start address“

This option controls what happens if an address is already in use. By default all decoders are set to address #3. This won't cause a problem if you only have one loco, but if you have more all other locomotives will need to be assigned other addresses. You can configure the starting address the PIKO SmartBox® uses when automatically assigning addresses. Alternatively, you can always configure a locomotive's address via CV-programming.

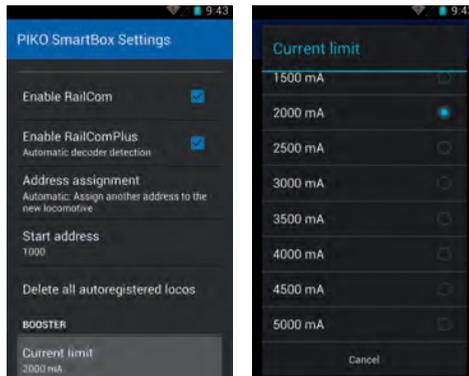
### ”Delete all autoregistered locos“

Here you have the possibility to delete all locomotives that registered via RailComPlus automatically. This is an option to avoid the difficult alternative to delete all locomotives separately.



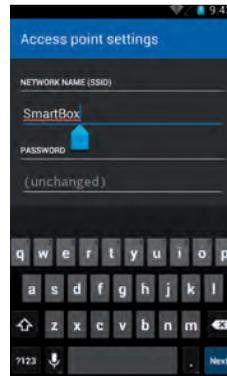
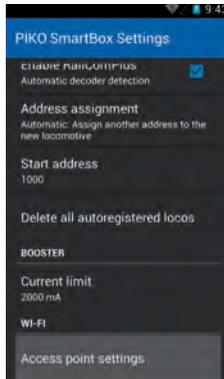
### ”Current limit“

The PIKO SmartBox® auto detects the power supply in use. The system will pick a current limit based on the power available. Usually this is the maximum available current. For smaller scales or layouts it can make sense to further limit the power provided.



## „Access point settings“

Here you can change the WiFi-settings like the network name or the password, for example to be able to use two PIKO SmartBox® within one WiFi range.



\*factory default password for WiFi “SmartBox” is “123456789”  
Enter a new network name and a new password.  
Additionally you can choose another channel for the WiFi.



Please be informed that after setting new datas for the WiFi network the connection between PIKO SmartBox® and PIKO SmartController® will be lost. Please return to the Android WiFi-menu of the PIKO SmartController® and re-enter you new password again. You also can use the WPS-method to reconnect.

## **5.4 Update and Reset of the PIKO SmartBox®**

### **5.4.1 Factory reset**

If you press the Reset-button (6\*) and then power on your PIKO SmartBox® the PIKO SmartBox® will be reset to factory settings . All user settings will be restored to the factory defaults. All items stored in the system, such as locos, switch panels, accessories, WiFi-settings, will be deleted. The action is confirmed by a short blink of a yellowish LED. After that the PIKO SmartBox® will restart.

When pressing the Reset-button during startup:

After booting, the reset-LED will light-up for ca. 1 second. If you release the button now the system will do a partial reset and reboot afterwards.

If you keep the button pressed for another 7 seconds a factory reset will be performed. The LED will light up for ca. 3 seconds. If you release the button now the system will reboot and start as usual.

### **5.4.2 Update**

If you press the Rescue/Update-button (8\*) while booting the PIKO SmartBox® it will start in “rescue mode”. Only in this mode the red LED will light-up permanently.

You can release the button now, the PIKO SmartBox® is ready to update.

To perform an update you need to insert a specially prepared USB-stick\*\*. The PIKO SmartBox® should automatically identify the USB-stick and start looking for the update data.

This may take up to two minutes. For better visual feedback we suggest the use of an USB stick with status LED. The blinking of the status LED will show that the process is active.

During the update the red LED of the PIKO SmartBox® will blink as well. When the update is finished the LED's will stop blinking and the PIKO SmartBox® will restart.

\* see 2.3 SmartBox®, Hardware

\*\*Due to technical limitations it is possible that the PIKO SmartBox® cannot identify the USB-stick. In this case please try to use another USB-stick from a different manufacturer.

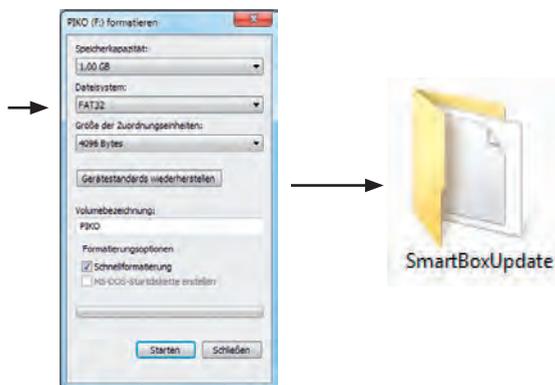
## Preparing the USB-stick for the Update

The USB-stick has to be formatted with a FAT32 file system (choose under “file system”).

Once the stick is formatted please create a folder on it named “SmartBoxUpdate” (please note that the folder name is case sensitive). You need to place the update-file, which is usually called “PIKO\_SmartBox®\_Update\_date.bci”, in this folder.

As soon as the update starts the status-LED will start blinking.

**Note:** If any failure occurs during this process the PIKO SmartBox® will cancel the update and remain in rescue-mode. The LED will light permanently. In this case, just unplug the USB-stick and reinsert it. After a successful update the LED will stop blinking and the PIKO SmartBox® will reboot.



### 5.4.3 BackUp and Restore / Rescue of the PIKO SmartBox®

#### Create a BackUp-file

The PIKO SmartBox® offers the possibility to store your settings and data on an USB-stick. Just plug in a USB-stick when the PIKO SmartBox® is activated and push the button for “BackUp” (6) (see chapter 2.3). The yellow LED next to this button will light up for confirmation, then the PIKO SmartBox® will restart.

The PIKO SmartBox® will now create a new folder on the USB stick called “SmartBoxBackup”. A text file will be stored in this folder.

Please note: If a Backup-file was already stored in this folder it will be replaced.

#### Restore from a BackUp-file

Plug a prepared USB-stick into your PIKO SmartBox® and wait for ca. 5 seconds (time for the PIKO SmartBox® to identify the USB-stick). Then press “Restore/BackUp” (8) (see chapter 2.3). The PIKO SmartBox® will now look for the Backup file and restore your settings and data.

Please note that the connection between PIKO SmartBox® and PIKO SmartControl® will be lost in this case. You can easily restore the connection with WPS (see “WiFi settings” in chapter 3.2).

#### Attention:

If there is more than one backup file stored on the USB-stick the PIKO SmartBox® will choose one randomly.

## 5.5 Updating the PIKO SmartController® with a computer

Please download the PIKO SmartControl® Updater.

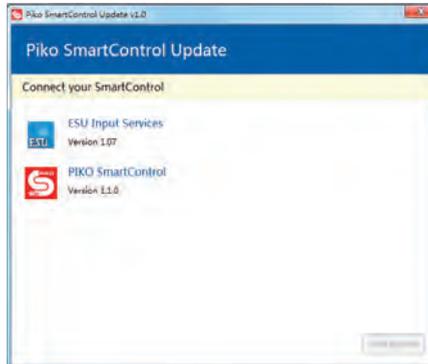
You can find it under [www.piko-shop.de/?a=sc](http://www.piko-shop.de/?a=sc)

Unpack the compressed file to a folder of your choice.

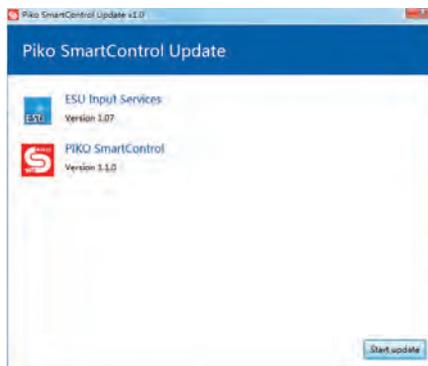
Start the installation by double-clicking on the file “SCUpdateSetup.exe”.

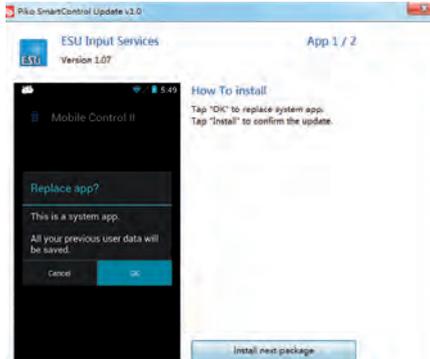
Follow the instructions on the screen and start the Updater after successful installation.

You will be asked to connect your PIKO SmartController® to your computer.



The Updater will register the PIKO SmartController® as soon as you connected it to the computer and will enable the “Start Update” button (bottom right).



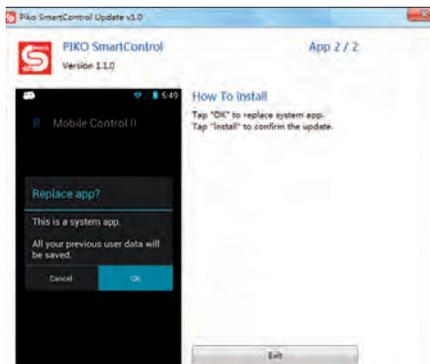


After you pressed the „Start Update“ button, the Android system of the PIKO SmartController® will ask which program it should use to install the updates. Please choose “paket installer” and confirm with “always”.

Please wait until the installation of the first app on the PIKO SmartController® is completed. Once the device’s screen goes back to the Homescreen (or the screen you were on before) you can choose to install the second app.

It is possible that a second update needs to be installed. Please follow the instructions of the PIKO SmartControl® Updater to see whether this is necessary or not.

Once finished you can close the PIKO SmartControl® Updater and unplug your PIKO SmartController®.



## 5.6. Connecting the PIKO SmartBox® with other systems

At the time of writing (06-2016) the latest firmware for the PIKO SmartBox® is "4.1.3". Starting with this firmware version it's possible to connect the PIKO CD(E)-adapter\* #55043. It is intended for use with CDE-compatible boosters. Besides that the connection can also be used for ESU compatible devices.

\*due to technical limitations only the C and D lines are used. Line E, which relays information about short circuits back to the command station, is not used.

## 6. Use of model railroad software

With the help of a suitable model railroad software which supports the PIKO SmartControl® system it is possible to control your layout using a computer,.

The PIKO SmartBox® acts like an "ESU ECoS" command station. In most cases you will be able to connect using the ESU ECoS settings.

Some programs require additional information like the "port" and / or the "IP address" of the command station.

As port please enter "15471".

As the PIKO SmartBox® connects to the network using "DHCP" it will automatically acquire an IP address from your router. As this IP is not "fixed" due to the automatic assignment it is necessary to identify the PIKO SmartBox® with the help of software that can scan a network for "MAC-addresses". The MAC-address can be found at the bottom of the PIKO SmartBox®.

At the time of writing (06-2016) the PIKO SmartControl® is supported by the following model railroad software: TrainController, WinDigiPet, RocRail, JMRI

## 7. Turning off the PIKO SmartControl® System

### PIKO SmartController®

In order to avoid data loss we suggested the following procedure:

1. Close the PIKO SmartControl® app on the PIKO SmartController® by using the "undo" button below the main display. Press it twice to close the app. If you only use the "home button" the app will not shut down completely.
2. Switch off the PIKO SmartController® to save the battery.

### PIKO SmartBox®:

Please first unplug the 5.5 mm power plug\* at the back of the PIKO SmartBox®, before unplugging the power supply from the wall outlet.

\*The residual voltage of the power supply may otherwise interfere with the shutdown procedure of the PIKO SmartBox®.

## 8. Overview of the Android operating system

The Android smartphone operating system was first released by Google in 2008. It focusses on an easy-to-use and intuitive user surface.

This is achieved by the combination of elegant software and select hardware-components like the capacitive touch-display or the function buttons along the side.

The user interface can be reduced to three main levels:

The so called home screen, the status bar and the main menu.

On the home screen, which serves more or less the same purpose as the desktop on a PC, you can find links to different applications, the so called “apps”. On the PIKO SmartControl® this home screen is separated into five screens, which you can switch between by side swiping with your finger.

After starting your device this is the screen you will see initially.

The status bar (also called notification bar) gives you quick information about the current system status, for example the remaining battery charge or the USB connections.

It is a small black bar with a grey line on top of the screen. Don't worry if your screen suddenly turned black and only shows small symbols on top – you may just have opened the status bar. Just touch the grey line and swipe it back to the top (or press the back button).

The main menu can be accessed via the home screen, by pressing the menu-symbol (6 dots in a circle) at the lower middle of the display.

Here you can find an overview of all installed Apps. Some are standard apps from Google, and others you might have installed yourself.

From here you can also access the settings menu.



**You will quickly realize that Google's Android operating system contains a lot of smart hidden shortcuts and features.**

As an example, you can easily access the settings menu via the status bar. Just open the status bar and press the symbol with the three sliders. Android is using a set of icons with clearly defined meaning which will repeat frequently and help you find your way around. After only a little while you'll find navigating the system to be very easy.

## **8.1 Downloading and installing apps from the Google® PlayStore**

Once you finished the setup of your Google account as described above, a whole world of apps is available for you on your device.

**Please remember that the PIKO SmartControl® is not a full featured smartphone. Depending on the specific requirements of the app some apps might not work on your device. Please understand that due to the large number of available apps and the customized hardware of the PIKO SmartControl® it is impossible to guarantee that all apps will work.**

### **Please note:**

The device has a fixed amount of memory. High memory usage may cause functional problems, for example the device may be very slow or apps may crash more often. If your device becomes extremely slow or battery life is very short you should consider removing some apps from your device.

## **8.2 Changing the background picture**

You can customize the background of your home screen. Doing so requires downloading a gallery app first. A gallery app is not included with the PIKO SmartControl®. PIKO does not recommend a specific gallery app. There is a large number of galleries available you can choose from according to your needs.

After you downloaded a "gallery"-app you can use pictures from the internal storage or download some from the internet. You can add your own pictures with the help of a computer.

## 8.3 Personalize your devices

Besides apps you can also put files on the device with the help of a computer. Just connect your PIKO SmartControl® to the computer via USB cable. Usually the device should install its drivers automatically on the computer. Once that is finished you can use the PIKO SmartControl® like an external hard drive and put files on it. Please be smart when putting files on it – music should be in the folder media, pictures in pictures and so on.

Please also note the information about memory usage above.

### Notice:

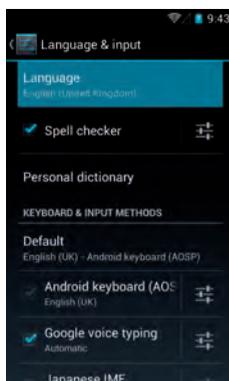
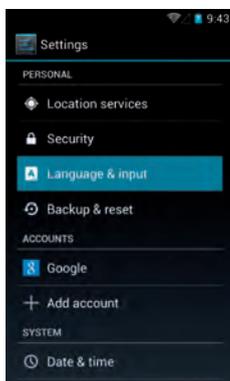
The USB cable should have data transfer capability. USB-B isn't suitable for file transfer!

## 8.4 Changing the system language

To change the language of the PIKO SmartControl®, please go to the main menu, then to settings and look for the „Personal“ menu. There you will find “Language and Input”.

In the “Language” you will find a list of the available languages. Choose your desired language.

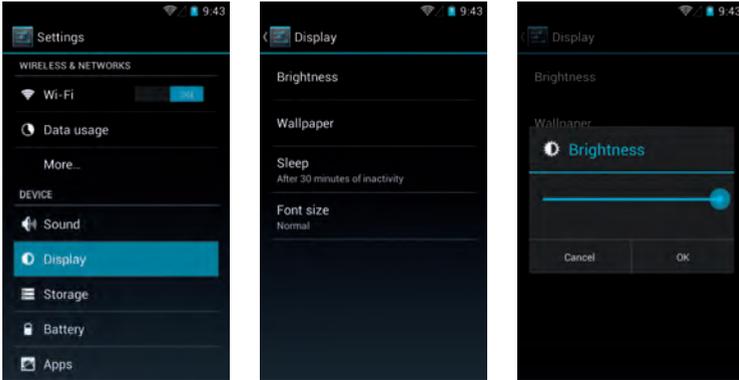
Please note that the PIKO SmartControl® App may not be available in all languages.



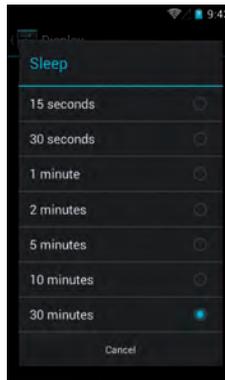
## 9. Android-Tips

### 9.1 Display settings: Brightness and timeout

To change the brightness of the display, go to main menu -> settings -> display.  
 Touch brightness and a small window will open where you can set your desired brightness.  
 Please note that increasing brightness will reduce battery life.



The timeout is the time after which display will switch off automatically.  
 You can change it by touching "sleep" and choosing the desired timeout.

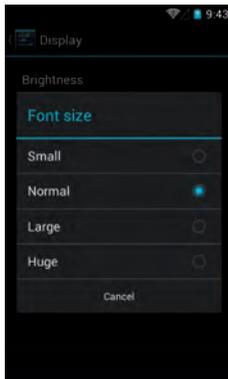


## 9.2 Font size

In the menu „display“ you also have the possibility to change the font size of the Android operating system, for easy reading.

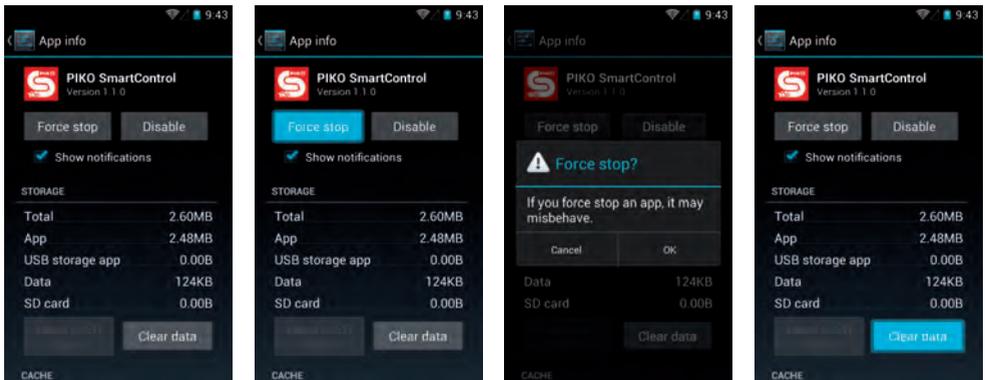
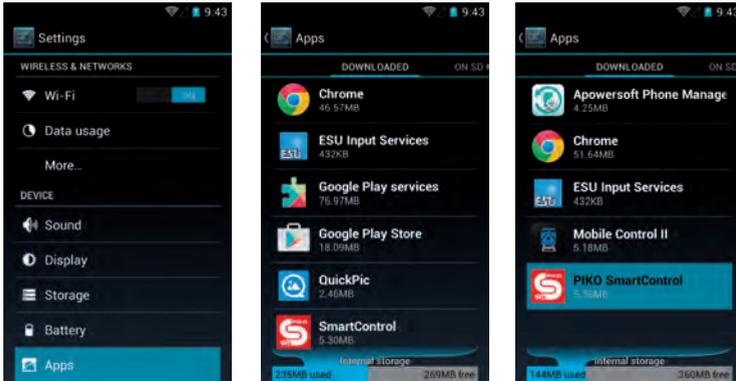
As soon as you click another font size you will see the user interface changing.

This option controls the font size for all Android-menus and information. The font size of the PIKO SmartControl® app cannot be changed.



### 9.3 Manage installed apps

Google's Android offers a comfortable way to check on and manage the installed applications. Go to main menu -> device -> Apps to get an overview of the installed apps. If an app causes problems you can quit it, remove its data or uninstall it completely. Please take care in this menu, otherwise data may be lost.



If you clear the data of the PIKO SmartControl® app, all settings and data on this device will be removed (within the PIKO SmartControl® app). Only some information can be restored from the PIKO SmartBox® later, so please take care here. Updates may require you to use this function.

## 9.4 Checking battery usage

Main menu -> settings -> device -> battery

This is an overview of the battery usage by application.

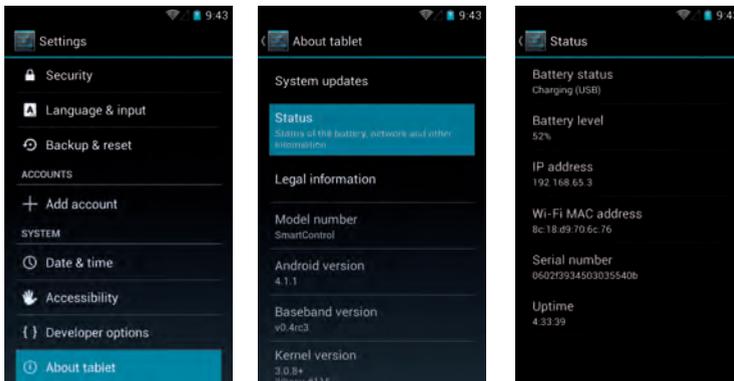
In case you installed a new app and suddenly have battery problems use this menu to identify the cause of the problem.



Useful information about the device

Main menu -> settings -> system -> about tablet

Here you can find useful information like installed versions or WiFi mac addresses.



### Developer options

We strongly recommend you do not change any settings in this menu. You may damage your device! Please understand that we do not offer any further information regarding these settings.

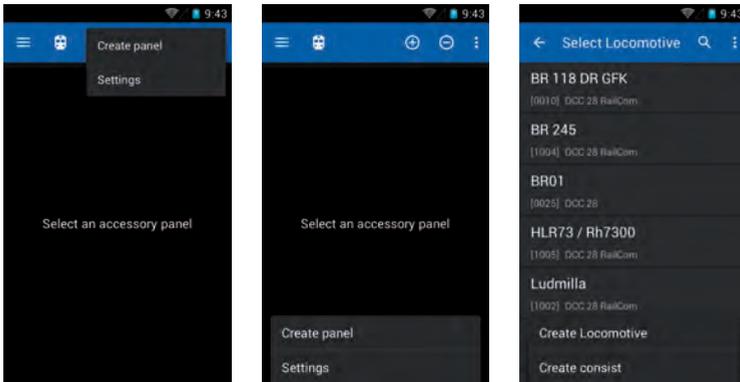
## 10. Detailed instructions for the PIKO SmartControl® App

Up to this point we just talked about the basic functions of your new PIKO SmartControl® system in order to give you a quick start.

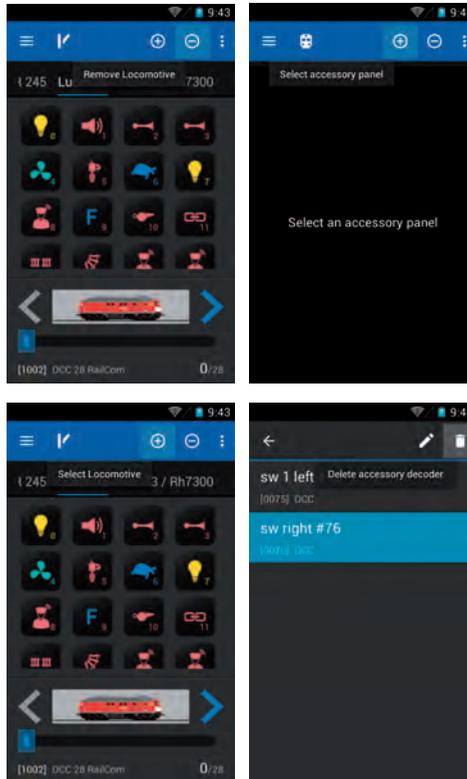
For those of you interested in more detail you will find more information following, like tips for handling and hidden features.

### 10.1 PIKO SmartControl® App

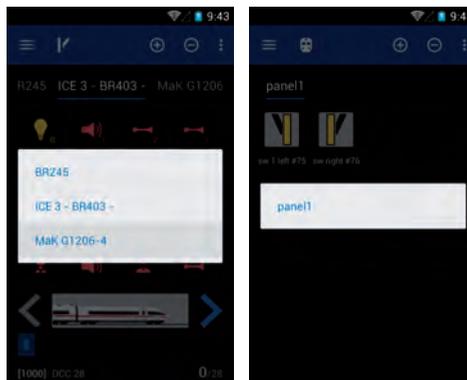
**Menus will appear close to the menu button you pressed.** If you press the menu button in the app (three dots) the menu will appear at the top of the display. If you use the hardware menu button the menu will appear at the bottom of the display.



If you press a button a little bit longer the app will show an explanation of the associated function.



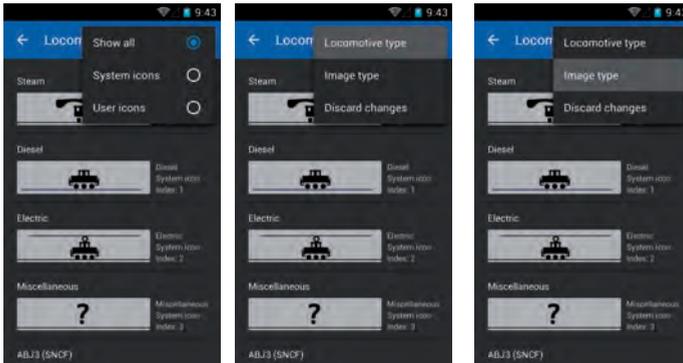
**Long pressing the locomotive name in the control panel will open a list of locomotives.** You can use this to switch to a different locomotive. The same functionality is available in the switch panel.



In the edit locomotive menu when editing the loco picture, you can sort the available pictures by locomotive type or origin of the picture.

Press the loco picture in the editing menu. You will enter the picture archive.

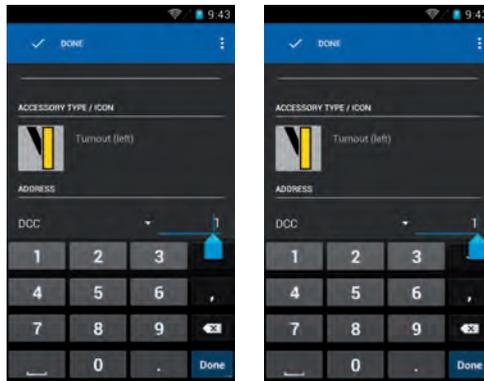
Now press the menu button in the display . You can sort the pictures by steam, diesel, electric or others.



**Be mindful about the cursor position when editing text.**

If it is on the left of a number or letter you can't delete that number or letter. Press the line again and a blue arrow below the cursor will appear. You can touch it and slide the cursor to the right side of the character. Now you can use backspace on the Android keyboard to delete the existing character and enter a new one.

The same function is also available for the switch panel.



## 10.2 Android menus and features

**You can create links on the home screen for all installed apps.**

Just enter the main menu where you can find all installed apps. Press and hold the app of your choice until the display jumps back to the home screen. You can now create a link to your app at the desired position on the home screen.



**Deleting a link works similarly.**

Just press and hold the app on the home screen until a trash bin appears at the top of your screen. The text will change to red if you drag the app on top of it. Release the app once the label turns red. This will delete the link from your home screen but not the app from your device. You can recreate that link at any time.

If you wish to delete an app completely you have to use the “Apps” menu in the Android main menu.

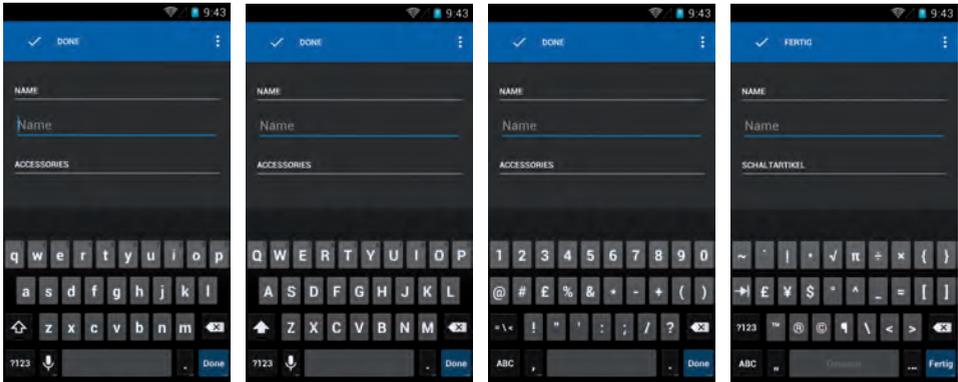


**The keyboard of your PIKO SmartControl® is very similar to a computer keyboard.**

To switch between regular and capital letters, you use the shift-button of the keyboard (arrow on left side). The letters displayed on the key caps will change accordingly.

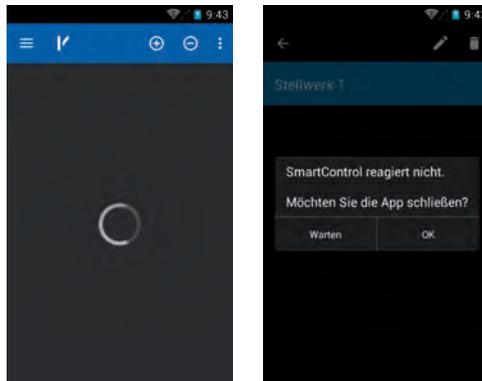
If you want to permanently switch to capital letters press and hold the shift-button. After a moment there will be a blue bar showing up in the arrow. This means “shift locked”. You will write in capital letters now until you hit “shift” again.

Immediately below the shift button are the special characters. After pressing this button, the keyboard will display the available signs. (We advise against using special characters in locomotive or switch panel names.)



If at any point the app stops responding, please wait a moment to see if it becomes responsive again. It might just be processing data. The app will either resume normal operation or a dialog will be shown asking you whether you want to quit the app.

Unless you were just saving something restarting the app will not result in data loss and is usually the best course of action.



Similar problems may occur with the Android operating system, as well.

If for instance you encounter a completely black or white screen give it a little time. If the system does not return to normal by itself try to leave the screen with the hardware back button. If that does not help, try pressing the home button. In the vast majority of cases this should solve the problem.

If none of the above helps restart the PIKO SmartControl®.

Please understand that with a complex system of hard and software like this, problems like this might occur.

## 11. PIKO SmartController® Accessories

### 11.1 Attaching the lanyard

1st step: Remove the clip from the lanyard and press the small loop together. Bend the top a little so that it is easier to insert.

2nd step: Insert the string into the intended opening on the device and try to loop it back out. In case this proves difficult we suggest you use tweezers to loop it back out.

3rd step: Pull the string out

4th step: Open the loop and put the clip through it

5th step: Pull on the clip to close the loop. Now you may attach the lanyard string to the clip.

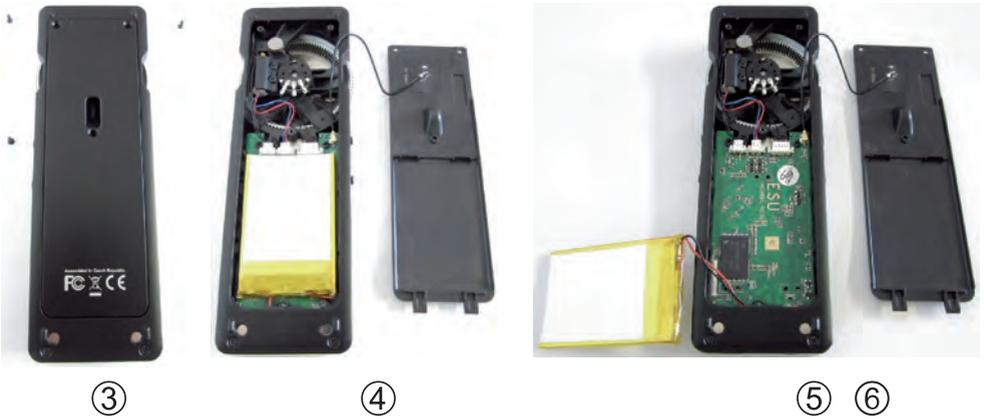


### 11.2 Changing the battery of the PIKO SmartController®

If at some point battery capacity has degraded or the battery is dead, it is possible to replace the battery.

Follow the steps below:

1. Switch the device off. Ensure it is completely turned off.
2. Put the device on a soft surface with the display towards the bottom. Ensure that the surface is free from sharp objects to avoid any damage to the display.
3. Remove the three screws on the cover
4. Carefully lift of the cover. ATTENTION: A wire connects the cover to the main circuit board\*. Handle with care!
5. Now you can carefully remove the battery carefully and unplug it from the main circuit board.
6. Plug in the new battery. Place it into the device. Make sure you do not to damage the wire.
7. Place the cover into the housing bottom side first and then close the cover. Remember the wire! Make sure to not bend, twist or damage it when closing the cover.
8. Before tightening the screws ensure the cover can close properly without any pressure. If there is a problem, please check the wire's position and try again.



\*In case the wire attached to the cover is accidentally removed from the main circuit board. It can be easily plugged into the main circuit board again. The plug can be inserted either direction. For easier assembly we suggest placing the wire towards the front of the unit.

**Warranty**

**All manipulations of the system will void the warranty, such as:**

All manipulations of the system will void the warranty, such as:

- to „root“ the device (gain access to restricted system files)
- modifying the device to a different operating system
- changing system setups and settings in the menu „developer options“
- and further modifications of software and hardware which exceed a common use of the device

## 12. Glossary

### 12.1 Digital glossary

**AnDi** – A small and simple digital decoder that controls driving direction in analog mode

**Bit** – Smallest unit of digital information with values of 0 and 1 (off / on)

**Booster** – Additional power for your layout. Provides power and amplifies digital signal

**BUS / BUS-System** – A data network that connects the different components of your systems with the digital central station

**Byte** – 8 bits of memory can represent values between 0 and 255

**Consisting** – Multiple locomotives can be controlled and act as a single locomotive

**CV** – Configuration Variable. 8-bit value that can be used to customized decoder behavior.

**CV-Programming** – With the help of a digital command station you can read and write CV's

**DCC** – Digital Command Control, protocol for the communication between command station and decoder; standardized by the NMRA

**Decoder** – A digital component for reading and handling digital signals from the the track

**Digital address / DCC-Address** – Digital commands can be send to a specific address. The decoder only executes commands for its address. All other commands are ignored.

**ESU** – Electronic Solutions Ulm

**Driving steps** – The range between 0% and 100% of motor power is divided into steps which will result in different speed levels

**Track occupancy detector** – An electric component that is connect to the track, recognizes if a section of track is occupied or not

**LNET / LocoNet** – Proprietary bus protocol for bidirectional communication between occupancy detectors, decoders and command stations

**Magnetic accessories** – Accessories that use a magnet for action

**MOROP** – Organization of model train fans Europe, responsible for the NEM standards

**NEM** – Norm of European model trains

**NMRA** – National Model Railroad Association

**Protocol** – Defines how data is formatted and transmitted between system components

**RailComPlus®** – System for bidirectional communication between decoder and command station. Decoders equipped with this feature will automatically register itself and its available functions with the command station. You can start playing immediately

**Command station** – The brain of every digital system – Provides power and the digital signal to the track.

## 12.2 Android glossary

**Access point** – Allows wireless device to connect to the network.

**App (Application)** – A software program that provides a user interface and allows the user to perform specific tasks or actions.

**Status bar / notification bar** – Provides a quick overview of the system status at the top edge of the display. It can be “pulled” down by swiping down.

**Booting** – Start-up process of the operation system during which all necessary data and configuration is loaded into main memory.

**Default value** – A standard value that is stored before user input. During „factory reset“ all configuration will be restored to default values.

**Display-Timeout** – Time of inactivity that has to pass before the display will switch off automatically.

**Factory reset** – Deletes all user data and settings and restores default values.

**Home screen** – The main desktop of the Android operating system where links to apps or folders can be placed for quick access

**IP-Address** – Internet Protocoll Address – A unique address assigned to every device that connects to the internet

**LAN** – Local Area Network – A wired network that allows a local data interchange.

**Open Source License** – A usually royalty free license that allows the source code to be modified and/ or shared under certain conditions. Open source makes it possible for everybody to modify or change software programs as the source code is available for everyone.

**Router** – Connects the home network to the internet. Routes traffic to and from the internet. Usually also provides network addresses to the devices on the local network.

**SSID** – Service Set Identifier – The name of a WiFi network

**Update** – Updates are provided for most apps on regular intervals to address problems or to improve performance.

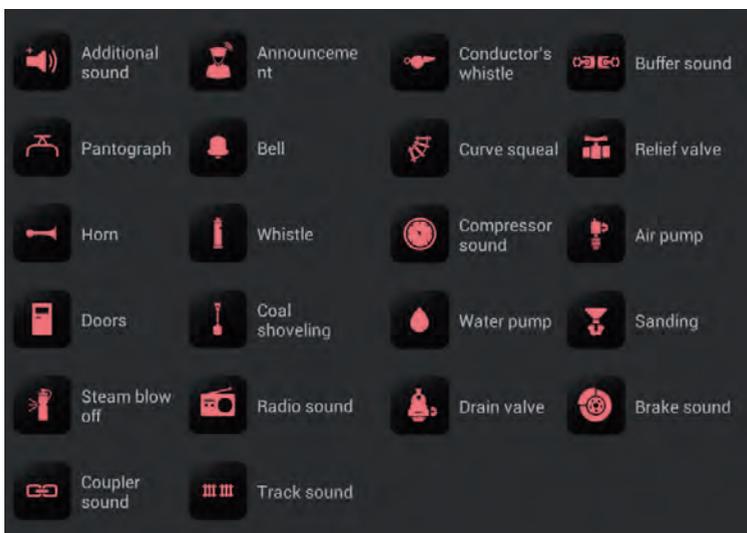
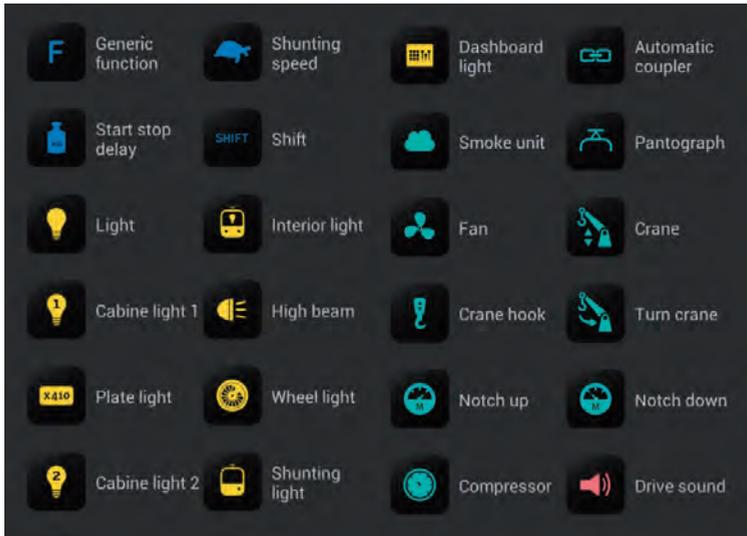
**WLAN** – Wireless local area network – Wireless network that allows connected devices to communicate with each other.

**WPS - WiFi Protected Setup** – Automatic connection setup between two WLAN devices using buttons (both devices must be equipped with this feature), also called „push button“-method. With this method both devices automatically exchange passwords, IP-addresses and names.

### 13. Function symbols

The symbol categories are color coded:

- blue: common controls
- yellow: lights
- cyan: Mechanical loco functions
- pink: Sound functions



## 14. Safety notice

- As the PIKO SmartControl® includes highly sensitive electronics we recommend you handle it with care. Avoid vibrations, drops or any other excessive force on the device.
- Protect the display against sharp objects like tools, try to avoid scratches.
- Always place your device on a level, nonslip surface to avoid any accidental drops.
- Protect the device against direct sun light and too much heat.
- Do not cover the device while charging the battery.
- Only use official accessories with the device.
- Avoid permanently operating the device attached to a charger.
- Only power up the system if you are sure that all electrical connections are OK and that no short circuits exist.
- Protect the device against dust, dirt or wet conditions. Clean it frequently.
- For indoor use only, do not use outdoors!
- For age 14 and older. This is not a toy!
- Do not change any settings in the menu „developer options“! Manipulation will void the warranty!

## 15. FAQ

At this point we would like to refer you to our PIKO SmartControl® FAQ and info page. You can find it in our PIKO WebShop under [www.piko-shop.de/?a=sc](http://www.piko-shop.de/?a=sc)

There you will find the latest information, software and some tutorial videos that demonstrate handling of the system. In case the page cannot answer all your questions you can find a contact form at the bottom of page.

**I was just playing, suddenly the system doesn't show any reaction anymore. All devices are still activated and I cannot see an obvious problem.**

Please make sure you didn't accidentally touch the "STOP"-button. The status LED of the PIKO SmartControl® should be green.

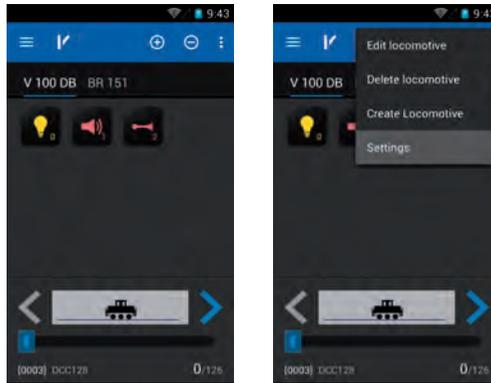
Check if the WiFi connection is still active.

If this doesn't help please restart the PIKO SmartBox® and the PIKO SmartControl®.

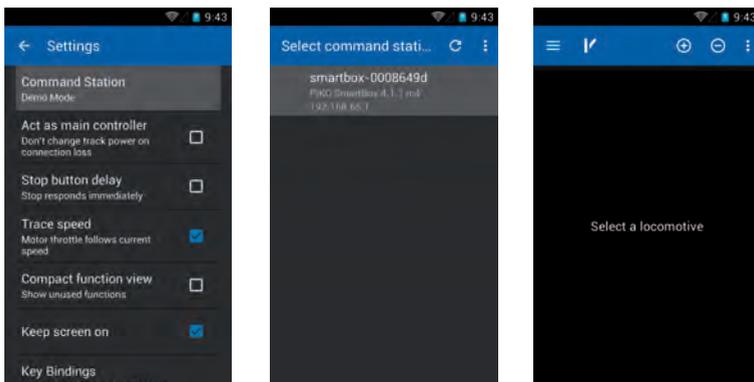
**I started my device. A WiFi connection as shown in the status bar. But when I open the PIKO SmartControl® app there are unknown locomotives which I didn't store there. I also cannot control any functions, nothing happens on the track. What's going on?**

Due to technical reasons the PIKO SmartControl® app includes a so called "demo mode". May be it was activated accidentally. To gain control of your layout again, please follow these steps:

1. Start the SmartControl® app.
2. Press the menu-button (top right or hardware-button).
3. Choose “settings”.



4. Go to “command station”.
5. In case your WiFi is OK you should see your correct PIKO SmartBox® here. Choose it by touching on it.
6. Now the app should redirect you to the settings menu now. Press “undo” once and you should be redirected to the control panel. Now you can control your layout again.



I installed a new app. Now the PIKO SmartControl® app doesn't work anymore.

Please understand that we cannot ensure all combinations of software/hardware and apps to work.

Due to the immense number of apps it may happen that some of them don't work properly.

If you are sure that the last installed app caused a problem, please uninstall it first. If this doesn't help you can do a factory reset.

My PIKO SmartControl® is switched off and charging. If I want to start the device but I can only see a battery symbol in the display.

This is a common Android feature. While charging press the ON/OFF-button of your device long enough until a small Android-logo appears in the display.

The system will start to boot now and keep charging in the background.

The function buttons of my device show no reaction.

If your device is new it can happen that the buttons are a little tight. After pressing them a few times this problem will be gone.

I built the layout according to the requirements. My PIKO SmartControl® is activated, but I cannot control anything.

Check the status LED of the PIKO SmartBox®. If it is off please check the power supply.

Check the WiFi settings of the PIKO SmartControl®. If no WiFi-symbol is visible in the status bar, please check that WiFi is activated (see chapter 3.2).

Check the connection between the PIKO SmartBox® and the track.

Check if the addresses of the to-be-controlled-items are entered correctly.

If nothing else works, try to restart the PIKO SmartBox®.

Check the app “Smart Control settings”. Please check if the correct command station was chosen.

Usually the WiFi-settings are setup by default, so that the PIKO SmartBox® and PIKO SmartControl® should connect automatically.

When controlling locomotives: In the locomotive list you can see the addresses of the available locos.

Check if these addresses are correct. In case there is a problem you can change the address which is stored in the app via “edit locomotive”. If you directly want to change the address of the decoder, please enter the menu “read and write CV’s” (see chapter 4.2 / 4.2.1)

In switch panel:

Please check the addresses of the accessories, stored in the accessories list.

Here you also can see the address given to a specific item. In case it is wrong you can change it with the help of the menu “edit accessory” (accessory list / press item few seconds / use pencil to edit; see chapter 4.3.2)

Other solutions:

- check if the connection between PIKO SmartBox® and track is correct
- check if the wires are properly fixed in the terminal socket
- check if the terminals are properly put into the PIKO SmartBox® (see chapter 3.1)

➔ None of the above mentioned suggestion helped. What should I do now?

In fact the system is a communicating mix of software. Due to technical reasons this software may “crash” or “freeze”. In this case please unplug the power supply of the PIKO SmartBox®, wait for ca. 10 seconds and plug it in again. Then restart your PIKO SmartControl®, too.

After restarting the devices things should be fine again.

I accidentally switched off the PIKO SmartControl® (or the battery was empty) while some locos were still running on the layout.

Try to restart the PIKO SmartControl®. After the WiFi reconnects everything should work fine again. In case the battery was empty, please connect it to the USB charger, wait for a few seconds and try to restart the device.

Unplug the PIKO SmartBox® if an emergency stop is required to avoid an accident.

If you want to avoid this to happen altogether you can adjust the settings in the PIKO SmartControl® App. In main menu -> settings you will find the option "act as main controller". This option will perform an emergency stop in the case that the connection between PIKO SmartBox® and PIKO SmartControl® is lost.

I accidentally removed the link of the PIKO SmartControl® app from the home screen. What can I do?

You can create a new link from the Android main menu . Just press and hold the app. Android will jump back to the home screen while the app is still attached to your fingertip. Choose a place to put it and release your finger.

In the same way you can also delete accidentally created links. Just touch them for a moment while they are on the home screen. A trash bin will appear on top of the display. Drop the link on top of the trash bin to delete it.

(see chapter 8.2)



I would like to personalize my device, for example with Music or more apps.

Basically the PIKO SmartControl® offers the same functionality as a common smartphone.

To add additional apps to your device you need a valid Google (Gmail) account.

To change the background picture you need to download a gallery app first.

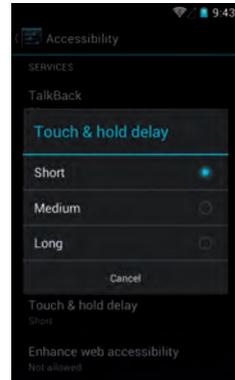
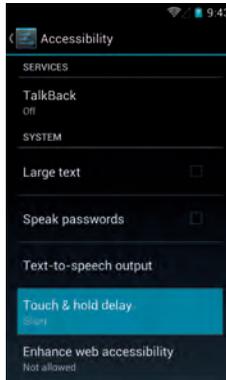
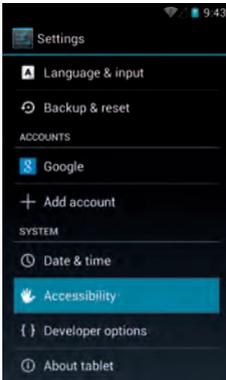
To play music you need an additional headset, a music player is already included in Android.

Files can be transferred to the device with an USB cable and a computer.

(see chapter 6.2 and following)

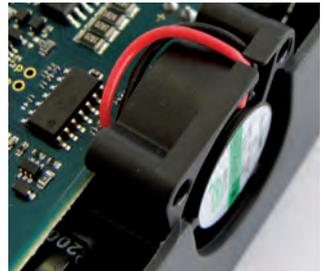
The display is too sensitive. I would like to change that.

You can customize the touch display sensitivity in the Accessibility settings. Go to main menu -> settings -> Accessibility > touch and hold delay. Change according to your needs..



I fixed my PIKO SmartBox® on a table as described in the manual before. After reassembly the housing doesn't close properly anymore. The PCB inside has a loose fit, too.

Please remove the upper part of the housing again. Please take care for the wires that are connected to the fan. The wires should be placed in the lower area „between the radius“.



## Notes



# PIKO model trains – for every layout!

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