

CabControl DCC System

User manual

1. Edition, November 2017



Content

1. Declaration of conformity	3
2. WEEE declaration	3
3. Important Note – Please read this first	4
4. Content of package	4
5. Introduction – Features	5
5.1. Android operating system	5
5.2. Wireless LAN (Wi-Fi) radio transmission	5
5.3. Remote control handset	5
5.4. Controlling locomotives.....	5
5.5. Accessories	5
6. Control elements	5
6.1. Integrated Control Unit	6
6.2. Network Settings	6
6.3. Updates to the CabControl System.....	6
7. Unpacking & connecting - Getting Started!	6
7.1. Battery	6
7.2. Lanyard.....	7
7.3. DCC 101 - Track work.....	7
7.4. Choosing a Location for the ICU.....	7
7.5. Connecting to the ICU (Integrated Control Unit).....	7
7.5.1. Track Connections.....	7
7.5.2. LAN Connection.....	7
7.5.3 LNet.....	8
7.5.4 ECoSBoost wired to ECoSlink bus interface	8
7.5.5 Power Supply	8
7.5.6 CabControl Power up.....	8
8. Switching on the Mobile Control II	8
9.1. Handling Android.....	8
9.1.1. Main screen	8
9.1.1.1. Home button	9
9.1.1.2. Return button	9
9.1.1.3. Menu button	9
9.2. Set-up.....	9
9.2.1. Language	9
9.2.2. Display	9
9.2.2.1. Passive state.....	9
9.3. Programs.....	10
9.3.1. Google Play Store.....	10
9.4. Connecting to WLAN	10
9.5. Starting App and selecting the command station	11
9.5.1. Demo mode	11
10. The main screen	11
10.1. Main menu	12
10.2. Manual CV Programming	12
10.3. Read CV's	12
10.4. Write CV's	12
10.5. DCC Address.....	13
11. Controlling locomotives and consists	13
11.1. Selecting a locomotive that is in the system	13
11.1.1. Searching locomotives.....	13
11.2. Running locomotives	14
11.2.1. Speed & Direction	14
11.2.2. Functions	14
11.2.3. Changing locomotives.....	14
11.2.3.1. Quick selection	15
11.3. Blocked locomotive	15
11.4. Edit locomotive	15
11.4.1. Locomotive name.....	16
11.4.2. Symbol (Icon)	16
11.4.3. Speed Step Settings	16
11.4.4. Address.....	16
11.4.5. Function button icons	16
11.5. Setting up a new locomotive	17
11.5. Registering RailComPlus	17
11.6. Creating a Consist.....	18
12. Accessories & routes	19
12.1. Panel mode (Route control)	19
12.2. New panel	19
12.2.1 Creating new accessories	19
12.2.2. Placing accessories	20
12.3. Switching accessories	20
12.4. Select panel	20
13. Configuration menu	21
13.1. Act as main controller	21
13.2. Stop delay	21
13.3. Trace speed	21
13.4. Compact function view	21
13.5. Keep screen on	21
13.6. Displaying the version number.....	21
13.7. Assignment of buttons – Key Bindings.....	22
14. CabControl Settings	22
14.1. Locomotive Takeover.....	22
14.2. Enable RailCom/RailComPlus	23
14.3. Address Assignment.....	23
14.4. Start Address.....	23
14.5. Delete All AutoRegistered Locos	23
14.6. Current Limit.....	23
14.7. Access Point settings	24
15. Software update	24
15.1. Mobile Control II Update	24
15.2. CabControl ICU Update	25
15.2. Backup and Restore / Rescue of the CabControl	25
16. ESU Support	26
16.1. Registration.....	26
16.2. Forum	26
16.3. Technical hotline	26
17. Appendix	26
17.1 Technical data	26
17.2. Throttle knob API	26
18. Warranty certificate	27

Declaration of conformity

1. Declaration of conformity

We, ESU electronic solutions ulm GmbH & Co KG, Edisonallee 29, D-89231 Neu-Ulm, Germany, declare in sole responsibility the product

50310 ESU CabControl Set

to which this declaration refers, complies with the following standards:

EN 71 1-3 : 1988 / 6 : 1994 – EN 50088 : 1996 – EN 55014, part 1 + part 2 : 1993

EN 61000-3-2 : 1995 – EN 60742 : 1995 – EN 61558-2-7 : 1998

According to the regulations of the directive

88 / 378 / EWG – 89 / 336 / EWG – 73 / 23 / EWG

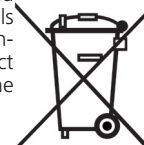
ETSI EN300 328:2007-04

The CabControl bears the CE mark.

2. WEEE declaration

Disposal of obsolete electrical and electronic equipment (as practised in the European Union and other European countries with dedicated collection systems).

This mark on the product, the packaging or the relevant documentation indicates that this product must not be treated like household waste. Instead this product should be disposed of at a suitable collection point for recycling of electrical and electronic appliances. Thus you contribute to avoid negative impact on the environment and people's health that could be caused by inappropriate disposal. Recycling of materials contributes to preserve our natural resources. For more information regarding recycling of this product, please contact your local administration, your waste collection service or the dealer / shop where you purchased this product.



Batteries do not belong in household trash!

Please do not dispose of discharged batteries in your household trash: take them to a collection point at your local town hall or dealer. Thus you assure an environmentally friendly way of disposal.

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Duplication and/or reproduction of this documentation in any form or shape require prior written consent by ESU.

Introduction - Features of CabControl

3. Important Note – Please read this first

Congratulations to your purchase of an ESU CabControl DCC System! The CabControl System offers you the opportunity to run your locos remotely (wireless) in conjunction with the Integrated Control Unit. Due to its ergonomically designed motorized throttle and the Android operating system the CabControl System makes running your model trains more comfortable and easier than ever before.

The CabControl is a modern, intelligent model train control system designed with the future in mind. In a short time you will experience how easy it is to run trains and other devices on your layout with the CabControl system and to discover new undreamed of possibilities for your hobby thanks to a unique variety of functions. Due to the new functions and abilities you will quickly find out how easy it is to run your model trains with your new CabControl DCC system.

This manual will guide you step by step through the multitude of possibilities with the CabControl system. However, we have one request:

Please read this manual carefully prior to initial operation. Although The CabControl system is robustly constructed there is the risk of damage due to incorrect wiring. If in doubt, avoid any “costly” experiments!

- The Mobile Control handset is designed solely for the use with model trains. Never leave the Mobile Control unit operating in conjunction with the CabControl System without supervision and never use it for controlling devices that transport people.
- The Mobile Control may only be operated with the devices described in this manual. Any other use than described in this manual is not permitted.
- The Mobile Control works with WIFI technology in the especially reserved 2.4 GHz frequency band. Disturbance by other devices are therefore highly unlikely.
- Do not drop your Mobile Control or sit on it and do not shake it or expose it to mechanical impact. Such rough handling may cause damage to the components of the device and is not covered by the ESU Warranty.
- Do not apply any caustic chemicals, cleaning detergents or similar for cleaning your Mobile Control handset.
- Do not attempt to open the housing of your Mobile Control. Inappropriate handling may cause damage to your Mobile Control.
- Only use the power supply provided for your CabControl system: Other transformers may lead to reduced output or in extreme cases to damage of the command station.
- Use the power supply provided with your CabControl system for the energy supply for your CabControl system only and not for any other household appliances.
- Never use Y-adapters in order to provide power to other devices for your model trains! An unintended connection to ground could lead to damage or destruction of your CabControl system!
- Check the power supply regularly for damage on the housing or the mains cable. Damaged parts may not be used under any circumstances! Do not attempt to repair the power supply! This may be fatal!
- Assure adequate ventilation of the power supply. Do not install in furniture without sufficient air circulation since this could lead to overheating or fire!
- Only connect devices intended for this purpose to The CabControl system. Even if other devices (also from other suppliers) may have the same plugs and sockets does this not automatically indicate that such devices may be operated with the CabControl system.

- Adhere to the wiring diagrams shown in this manual when connecting your layout. Other circuitry could lead to damage of The CabControl system.
- Never support yourself on ICU or the Mobile Control II Throttle of the CabControl system.
- Never expose your CabControl system to rain, humidity or direct sunlight. In case of high temperature variations (e.g. when you take your CabControl system from the cold car to your comfortably heated house) please wait for a few hours until the device has adjusted to the temperature before switching it on.
- When using CabControl system outside you must protect it from the elements under all circumstances! Only keep Your CabControl system outside as long as you run trains and avoid temperatures below 50° Fahrenheit (10 C) or above 85° Fahrenheit (30 C).
- Do not attempt to open Your CabControl system. Inappropriate handling may lead to damage of the command station.

4. Content of package

Please check the completeness of your CabControl System immediately after opening the package.

You should find the following components in the package:

- Mobile Control II Throttle
- Integrated Control Unit
- 15-21V Variable 7amp Power Supply with Power Cord.
- USB battery charger cable
- Lanyard
- Qty 2 - 2 Pin Screw Terminal Connectors
- (This) manual



UNBOXING VIDEO



Figure 1: Contents of CabControl Set

Introduction

5. Introduction – Features of the Mobile Control II Throttle

With CabControl you have acquired a system that can accomplish much more than “just run locos” in wireless mode. In this chapter we introduce you to the features of the Mobile Control II Throttle.

5.1. Android operating system

Mobile Control is the first model train controller based on the Android operating system. This system, originally developed by Google as an operating system for smart phones, has advanced to become a universally useful operating system in recent years, and is now installed in TV sets, washing machines or motor vehicles, amongst others. The beauty of Android is that you as the user can easily extend the system and add more functions with the aid of “Apps” (Application Program). You may download and install these apps directly from the “Google Play Store”.

Due to its touch screen and its well thought out and standardized graphic user interface, operating Android devices becomes quite easy after a short while - even for the untrained user.

Since the Android system can easily be adapted to new systems it was an obvious choice to equip the Mobile Control II Throttle with this operating system. Thus you have a contemporary, easy to handle throttle for your model trains that can be extended at any time by downloading further apps from the Google Play Store. Such apps do not necessarily have to originate from ESU; software developers are welcome to write or adapt Apps suitable for the Mobile Control.

5.2. Wireless LAN (Wi-Fi) radio transmission

The radio transmission of the Mobile Control is based on the (Wireless Local Area Network) standard, which has been standardized many years ago by the IEEE and which has proven itself over and over. Utilizing an open standard offers many advantages for you as a user: Due to the reserved frequency band with many automatically searched radio channels, disturbances by other participants in the radio network are eliminated for all practical purposes. Data transmission in both directions is very quick and reliable assuring a very short response time of your locomotives virtually without any delay. This also facilitates that all changes made in the Integrated Control Unit by additional Throttles are transferred to the current Mobile Control II Throttle and vice versa. Thus all data such as speed of locomotives or turnout settings are always synchronized between the Mobile Control handset and the Integrated Control Unit.

Furthermore it is possible to increase the range by installing commercially available WLAN repeaters at any time. Up to 32 Mobile Control handsets may be connected to an Integrated Control Unit.

5.3. Remote control handset

When you hold the Mobile Control for the first time you will immediately notice the excellent ergonomic design: you can reach all of the control elements single handedly and the most important ones even without looking: you can keep looking at the layout and your trains and not have to look only at the throttle.

This is facilitated by the centrally located, motorized throttle knob with limit stop, which enables you to delicately adjust the speed of your trains as well as the direction of travel.

For switching functions simply touch the icons on the touch screen. The touch screen also serves for easy handling of functions – exactly as you are used to from your mobile phone. There are two buttons on either side of the unit, which you may assign to any function you desire; for instance, for changing the direction or for the most important functions.

5.4. Controlling locomotives

In the locomotive mode you can observe the most important operating parameters such as the locomotive name, icon, speed as well as the function status, at a glance. The speed is controlled with the throttle knob. Subject to the data format one can switch up to 28 functions plus the headlights.

You may assign to and control as many locomotives as you wish with each handset. Each throttle can control different locomotives. Taking over a locomotive from another handset (“stealing a loco”) can be permitted if so desired.

5.5. Accessories

Switching accessories is no big deal for the Mobile Control: One can define any number of panels, on which you may place and control accessories according to your preference. All icons and signal aspects as set on the Integrated Control Unit will be directly transferred to the Mobile Control.

6. Control elements

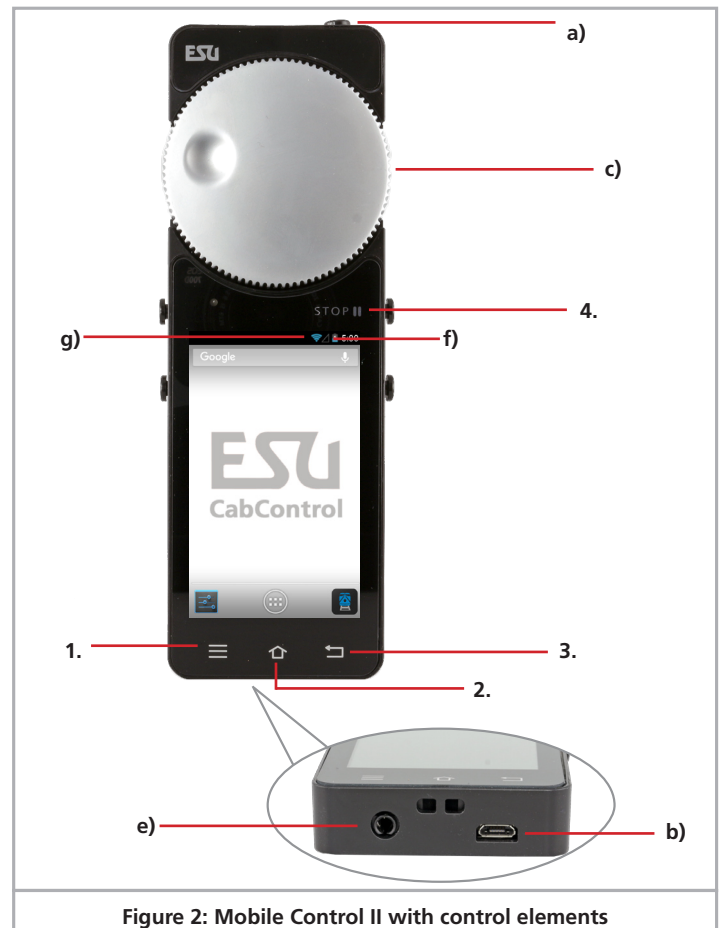


Figure 2: Mobile Control II with control elements

Integrated Control Unit

- a) Power button: A long push of the power button turns the Mobile Control II on or off. Starting up the Android system takes about two minutes. A short press of the power button switches the already active device into standby mode. If the device is active but the touch screen is dark, a short press of the power button turns on the display.
- b) USB charger socket: This socket serves for connecting a battery charger respectively for connecting the device to a PC.
- c) Motorized throttle knob: The throttle knob with limit stop allows you to set the desired speed. Turning it anti-clockwise to the limit stop results in a change of direction. The throttle knob is motorized and follows the required speed.
- d) Touch buttons: There are four system buttons on the touch screen
 1. Menu: Calling up App dependent menus.
 2. Home: Pressing the Home button changes the display to the Android start screen at any time.
 3. Back: This button causes a step back in the menus or Apps.
 4. Emergency Stop: Pressing this button while the Mobile Control App is active (!), turns the DC current on or off. One LED (red/green) signals the track status.
- e) Headphone Jack: This 3.5mm jack serves for connecting a headset (Nokia or Samsung compatible). Besides two stereo speakers one can also connect a microphone.
- f) Charging gauge: displays the battery status.
- g) WLAN display: Shows the WLAN signal strength.

6.1. Integrated Control Unit

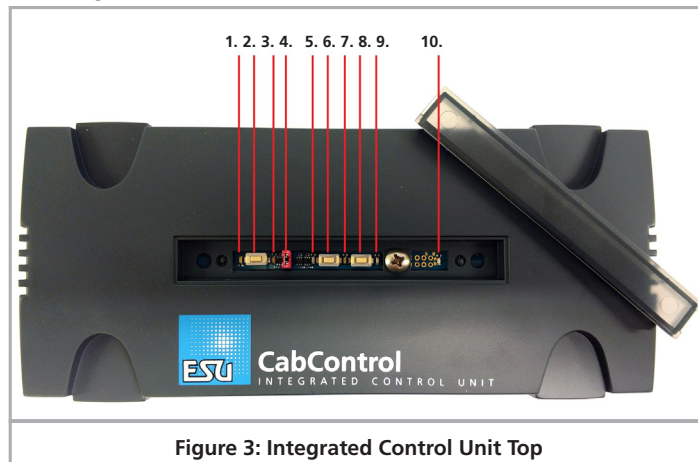


Figure 3: Integrated Control Unit Top

- 1) Status LED for WPS connection (Wi-Fi connection via "Push Button")
- 2) Button for WPS connection
- 3) Blue status LED for active connection between the ICU and Mobile Control II Throttle. Lights up when CabControl App is active and connected to the ICU
- 4) Jumper to turn Wi-Fi On and Off
- 5) Status LED for Track Power. (Blinks if track power is OFF. Steady on Green when Track Power is ON.)

- 6) Button for System Reset/Back Up
- 7) Status LED for System Reset/Back Up
- 8) Button for Rescue/Update
- 9) Status LED for Rescue/Update
- 10) Status LED for Power to the System. If Light is on, Power is applied

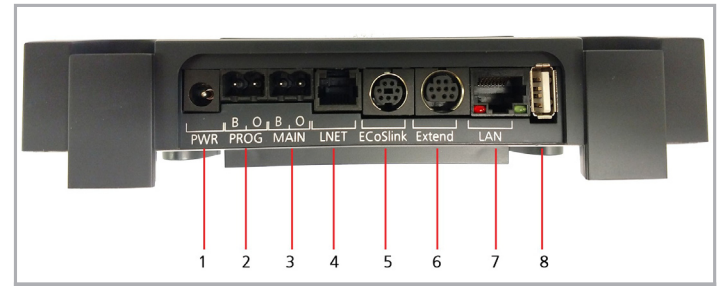


Figure 4: Integrated Control Unit Back

- 1) 5.5mm socket for Power Supply
- 2) Programming Track - Hook up Programming Track here.
- 3) Main Track – Hook up Main Layout Track here.
- 4) L-Net socket - L-Net connection not currently active at time of printing. Can be turned on with a future update
- 5) EcoSlink socket – EcoSlink Bus Line
- 6) Extended socket – Connect additional ESU compatible components
- 7) LAN (Local Area Network) Connection. Ethernet to Computer
- 8) USB socket for Updates and Mobile Control II Charging.

6.2. Network Settings

The CabControl network settings are not customizable. It will always have the same default settings when connecting to a network. In the interest of functional security and reliability we do not provide a user interface to adjust the network settings.

6.3. Updates to the CabControl System

Updates can easily be applied to the system via the USB connection through a USB Data Stick.

7. Unpacking & connecting - Getting Started!

7.1. Battery

The Mobile Control II is powered by an integral Lithium Polymer rechargeable battery generally good for 3 to 5 hours operating time. The charger cable is plugged into the micro USB socket at the bottom of the device. Connect this socket with the supplied USB charger cable with any USB charger or directly with the USB port on the back of the CabControl ICU. You may use any of the commercially available USB chargers. Charging to a full load takes about two to three hours.



We recommend to fully charging the batteries prior to initial use and not turning on the device before the batteries are fully charged.

Connections



During charging the Mobile Control II may be used, however, subject to the type of charger the touch screen may not work reliably or not at all.

The battery can be replaced by a new one at the end of its life. Suitable batteries with the part number 50113.SP.01 are available from ESU.

7.2. Lanyard

The supplied lanyard can be fed into the eye at the bottom of the Mobile Control II handset. We recommend always carrying the Mobile Control II by putting the lanyard around your neck. Thus it will never inadvertently fall to the floor. Damage caused by impact to the Mobile Control II throttle is not covered under the ESU Warranty.



Figure 5: Section of the eye with threaded lanyard

7.3. DCC 101 - Track work

In order to properly troubleshoot and to ensure a faultless installation of your New CabControl DCC System, before connecting any wires to the ICU you should follow a few general model railroading “rules” for DCC.

1. Ensure all rail joiners are secure. Loose connections may cause power and signal interruptions.
2. Power feeders should be added approx. every 6 feet to avoid voltage drops. Connecting these feeders to a “power bus” line around the layout is normally best then this bus line can be used to connect to the CabControl System ICU.
3. Run a separate Bus line for accessories so there is not interference with the DCC Signal.
4. Keep your layout tidy. Broken wires, bits of metal lying around (IE: Track Nails), and damaged electronics will cause a lot of frustration and can lead to shorts that could potentially damage your Locomotives and CabControl system.
5. Be sure you do not have any unprotected reverse loops as this will lead to a direct short. Please use an auto reverse device or DPDT toggle switch to avoid shorting the CabControl system upon hookup.
6. It is best to remove all locomotives from the layout BEFORE connecting to your CabControl system. Any Locomotives equipped ESU LokSound or LokPilot decoders containing RailComPlus will automatically register into the CabControl system. This is best to do one at a time so no conflicts occur.

7.4. Choosing a Location for the ICU

When looking for a place to mount the Integrated Control Unit it is important to keep the following requirements in mind.

- All Connected wires should be properly mounted to the layout with no “pulling force” on the ICU

- Be careful to protect against all hard vibrations and impacts
- Be sure there is no interference with the Wi-Fi signal. Avoid putting into a metal box or wrapping with layout wiring.
- Leave yourself some extra wire to pull the ICU out and access if needed.
- Be sure the built in cooling fan is not covered and has access to fresh air to prevent overheating.

7.5. Connecting to the ICU (Integrated Control Unit)

7.5.1. Track Connections

After making sure that your layout is setup according to above mentioned criteria you can connect the CabControl ICU to the track. You begin by connecting the wires to the green terminal blocks. These blocks can be removed from the ICU to insert the wires.

Before inserting the wire, please open the terminal screws a little bit. The terminals will come closed and need to be opened first with a screwdriver so that the wires are clasped by metal on both sides of the terminal block.

Tinning the Ends of the wire with solder is a good practice as it will keep the ends from fraying when inserted into the terminal blocks. Be sure to keep the rubber insulations back far enough to clear the metal clasp in the terminal block but not too far so that bare wire is exposed even when push all the way in. Tighten the screws, but do not over tighten as the tightening screw could strip.

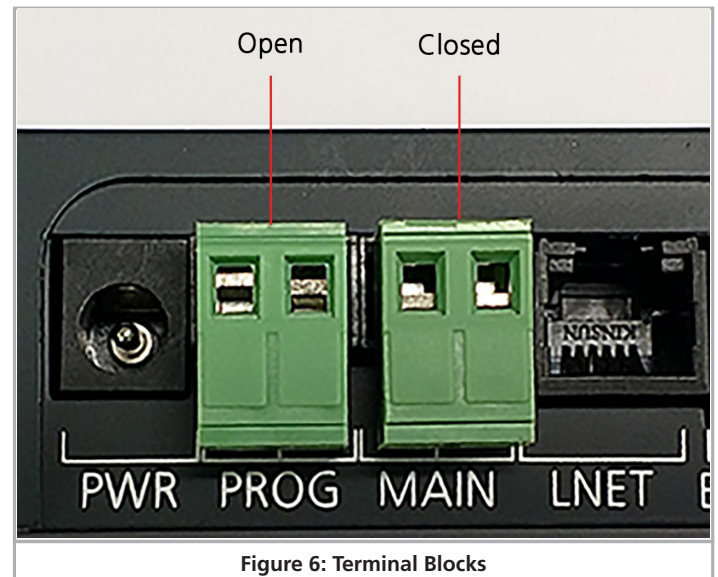


Figure 6: Terminal Blocks

Do this for both the “Main Track” and a separate “Programming Track”.

7.5.2. LAN Connection

By connecting an Ethernet Cable between the LAN connection and your network your CabControl system can have an Internet connection which can be used for updates, and loading new Apps onto your Mobile Control II throttles. This is also the interface to computer so that you could use model railroad software to run the CabControl system if desired.

Power supply

7.5.3 LNet

The L-Net connection is not currently active at time of printing. This may be turned on with a future update.

7.5.4 ECoSBoost wired to ECoSlink bus interface

If you need more power to run your layout we recommend to connect an ESU ECoSBoost 50010 (4A option) resp. 50011 (8A option); These boosters can generate all RailCom® feedback features. Wiring these devices is quite easy. Simply hook up the bus cable provided with one of the ECoSlink Connect sockets. You will find more information about our ECoSBoost boosters in the user manual for the boosters.

7.5.5 Power Supply

Once the rest of the cables and track wires are connected the supplied Variable 15V-21V Power Supplied can be plugged in. Just insert the 5.5mm terminal of the power supply into the socket on the back of the CabControl ICU (socket "PWR"). The CabControl will start automatically and setup a local Wi-Fi network, to connect with the Mobile Control II.



If no LAN-wire is connected and WPS is not activated, the CabControl will create a local wireless network exclusively for the Mobile Control II. An internet connection is not available in this configuration. (See 7.5.2 Above)



The voltage on the Included Power Supply is variable and should be adjusted before Track Power is turned on. If this is turned too high and your lighting resistance is not enough to cover the voltage, Bulbs can be blown. Also some decoders cannot handle higher voltages. Please check to be sure your equipment is compatible with the Voltage you chose. ESU is not responsible for damage caused by incorrect track voltage settings.

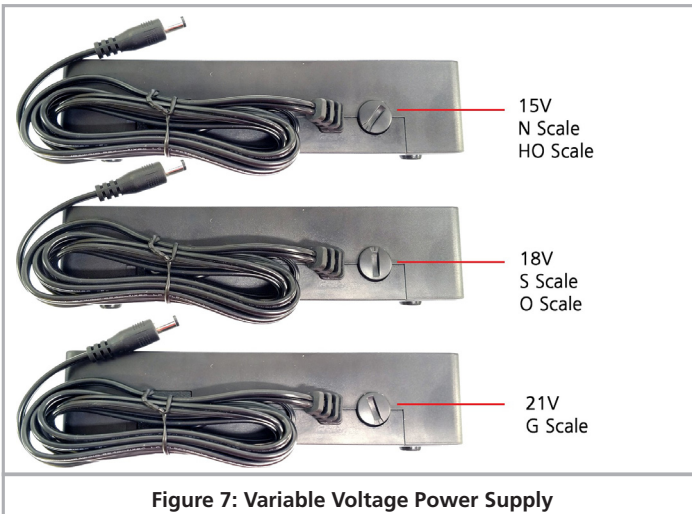


Figure 7: Variable Voltage Power Supply

7.5.6 CabControl Power up

Once the Power Supply is connected to your CabControl system the power cycle will begin.

1. The Power Status LED will light up green and stay steady.
2. Shortly after a second green LED (track status) and a Blue LED (WiFi connection) will blink briefly on and off.
3. The cooling fan will start briefly as a test.
4. The green track status LED will now start blinking on and off repeatedly until the Track Power is turned on by the Mobile Control II Throttle once it is connected to the ICU.

8. Switching on the Mobile Control II

Press and hold the power button until an icon appears on the screen. The very first switch-on may take up to two minutes until Android has started and updated all system settings. Please consider the following when working with the mobile Control II:

- In order to save energy the display is turned off automatically after one minute of inactivity just like a mobile phone.
- In this case simply press the power button for a short time (less than one second) in order to activate the device once again.
- Even when the display appears dark, the throttle is still active and consumes energy. The battery will probably be discharged after one day in "Stand by" and the device will shut down automatically.
- At the end of an operating session we recommend to shut down the Mobile Control by pressing and holding the power button (while the display is active) until the switch-off menu appears. If you now select "Turning-off" and confirm the query, then the device will shut down permanently.

9.1. Handling Android

Although handling Android has been designed very intuitively and since the Mobile Control II is to be handled, by and large, like a mobile phone we think a few basic tips are in order.

9.1.1. Main screen

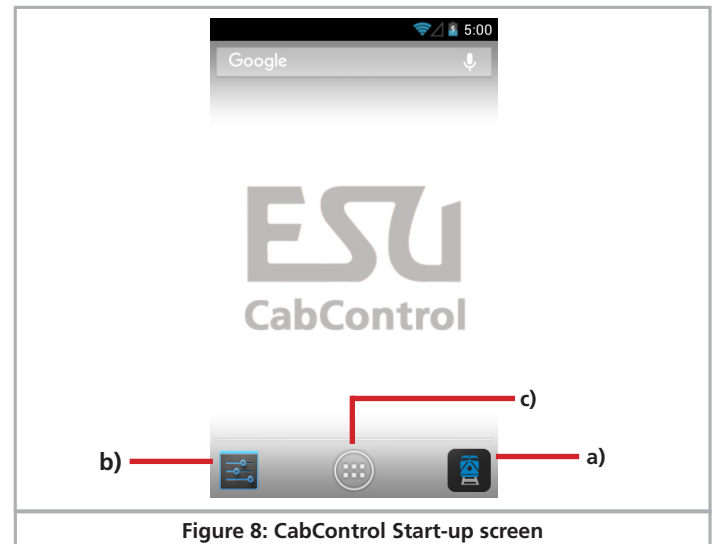


Figure 8: CabControl Start-up screen

Settings

You will see two pictograms on the start-up screen:

- a) Symbol for starting the actual mobile control App
- b) Icon for calling up the Android set-up menus
- c) Icon for viewing all installed Apps

You may start the actual Mobile Control software by touching the icon a).

9.1.1.1. Home button

If you want to return to the start-up screen, simply press the home button in any menu and at any time.

9.1.1.2. Return button

The return button always leads you back to the previous menu.

9.1.1.3. Menu button

In many programs there is an option to access extended properties by pressing the menu button.

9.2. Set-up

It pays off to first have a look at the set-up menu. There you will find several settings, which you may want to adjust right at the start.

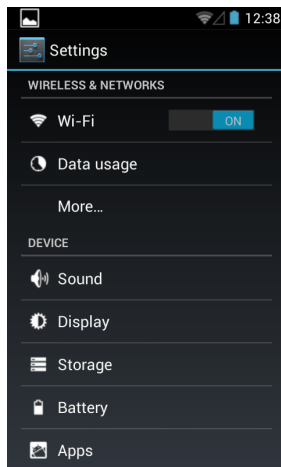


Figure 9: Set-up menu

9.2.1. Language

You may change the system language at any time. Currently the Mobile Control App developed by ESU only supports German and English.

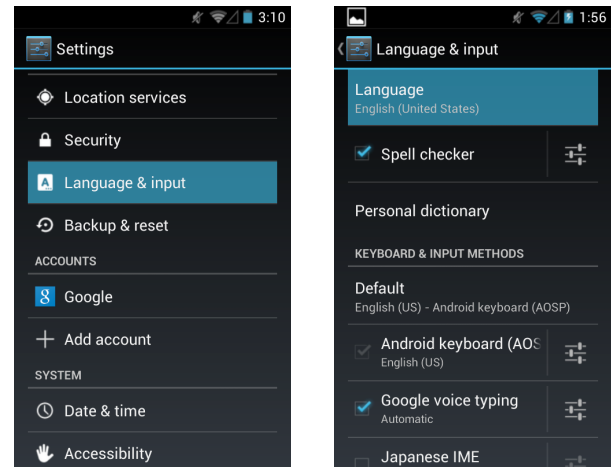


Figure 10: Language settings

9.2.2. Display

There are two important settings within the display settings.

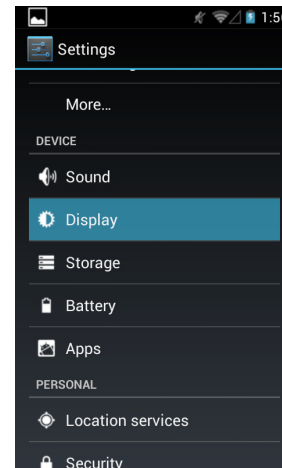


Figure 11: Display settings

9.2.2.1. Passive state

Here you can adjust after how many minutes of inactivity the screen of the Mobile Control is turned off. The higher this value, the more energy is consumed.

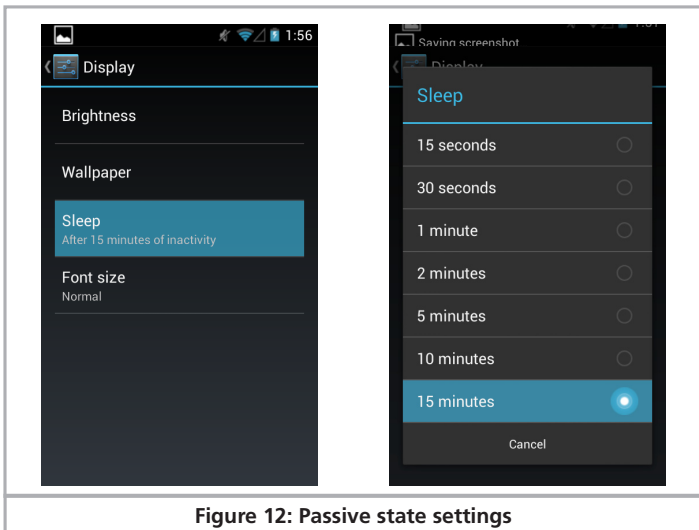



Figure 12: Passive state settings

9.2.2.1. Brightness

Here you can adjust the brightness of the display. Preferably choose a rather dark setting in order to extend the operating time before you have to recharge the batteries.

 The brighter the display, the more heat is generated in the device. This is quite normal and no reason for concern.

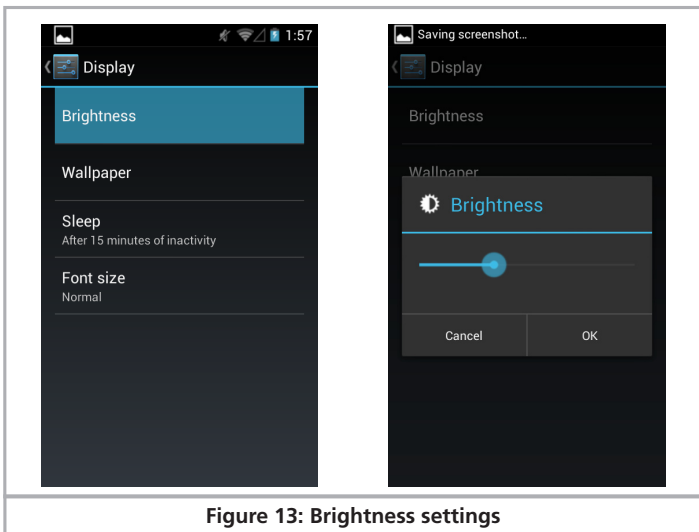


Figure 13: Brightness settings

9.3. Programs

Here you can see which programs have been installed. However, what really matters, is the Google Play Store.

9.3.1. Google Play Store

The Google Play Store is the place where you may obtain new Apps and install them on your device. To make sure that this will work as intended, you must link your device with your Google account or, if you do not have an account yet, you must establish a new account.

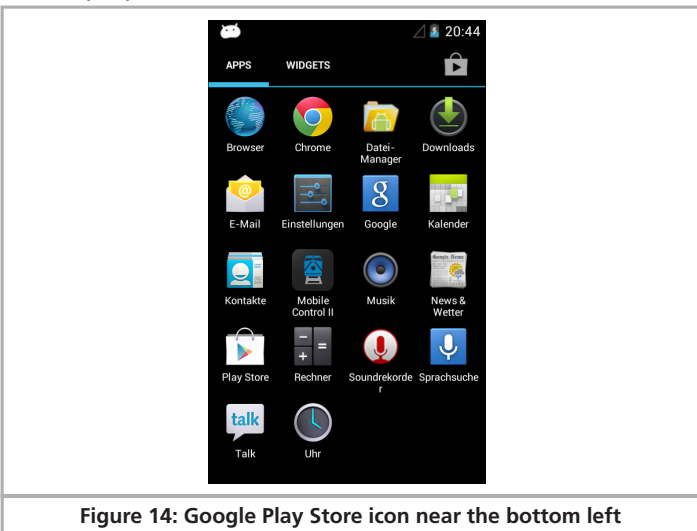


Figure 14: Google Play Store icon near the bottom left



Please note that we have no commercial or any other type of link with Google at all. The data submitted when opening an account are not sent to ESU and we are not in a position to obtain such data.



All Apps and programs should be easily installed on the Mobile Control unit. Of course, we cannot provide a guarantee for the proper working of Apps not supplied by ESU.



The memory of the Mobile Control is limited. Please bear this in mind when installing programs.

9.4. Connecting to WLAN

After setting up the device you must establish a link to the WLAN. This may either be your home network or the WLAN signal generated by the CabControl ICU. If using your home network you must have your ICU connected to your WLAN device with an Ethernet cable.



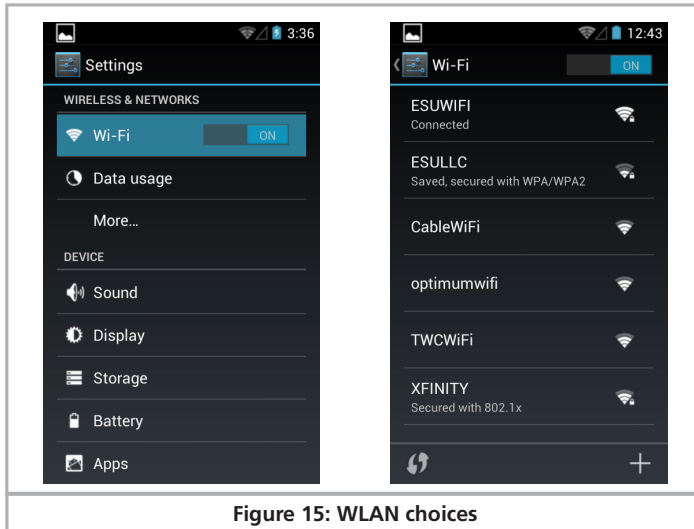
The CabControl system will appear as "ESUWIFI". If the Mobile Control II finds this network, it will automatically attempt to establish a connection. In this case you may skip the following steps.

- Select the first menu item "Wi-Fi" in the Android set-up. Make sure that the slide control is set to "On".
- Select the desired network from the list of available Wi-Fi networks by touching its name.



The quality of the signal link is permanently displayed in the status bar at the top. The longer the bar, the stronger and more reliable is the connection.

Connecting to WLAN



Initial Setup and Unboxing Video

9.5. Starting App and selecting the command station

After the WLAN connection to the CabControl ICU has been established successfully, you may start the actual Mobile Control II control App. This is done by pressing the CabControl Icon on the main screen.

First one must select the command station to which the Mobile Control II should be connected. If there is only one system in range it will automatically connect. If there is more than one system this cannot be done automatically, because there may be several command stations in a network. Therefore a list with the available command stations is displayed.

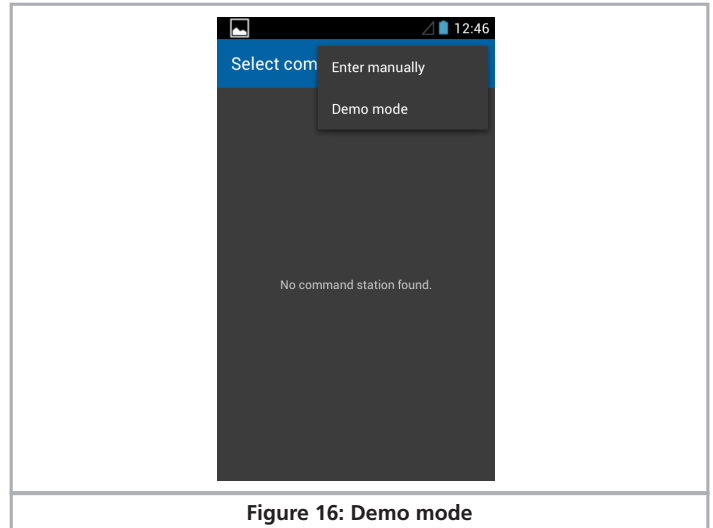
Select the command station to which you want to establish a connection. Normally only one CabControl system will be shown. For better orientation the software version as well as the IP address of the command station is being displayed in addition to the host name of the command station.



The App memorizes which command station you have chosen. During the next start, establishing a link will give priority to the most recently employed command station. Should this be unsuccessful, then the list of all available command stations will be displayed.

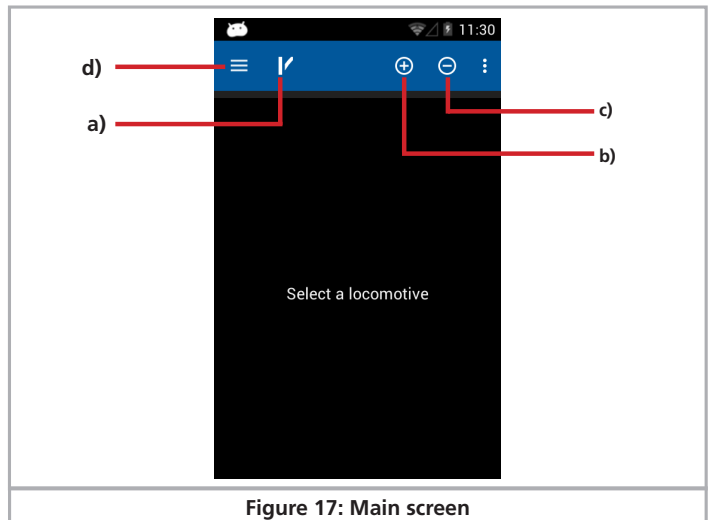
9.5.1. Demo mode

If there is no command station in the network, then you may select the demo mode in the context menu. You can test the device with the aid of this demo mode.



10. The main screen

Finally the main screen of the Mobil Control II will be displayed. All main functions are controlled from this screen. If there are already some locomotives in the system it will ask you to select one.



Main Screen

- Toggle between locomotive control and accessory control panels (panel)
- "+" Adding locomotives or accessory control panels to the quick access list
- "-" Deleting locomotives or accessory control panels from the quick access list
- Displaying the main menu

If this is the first start, there may not be any locos listed and the screen will state "No Locomotives".

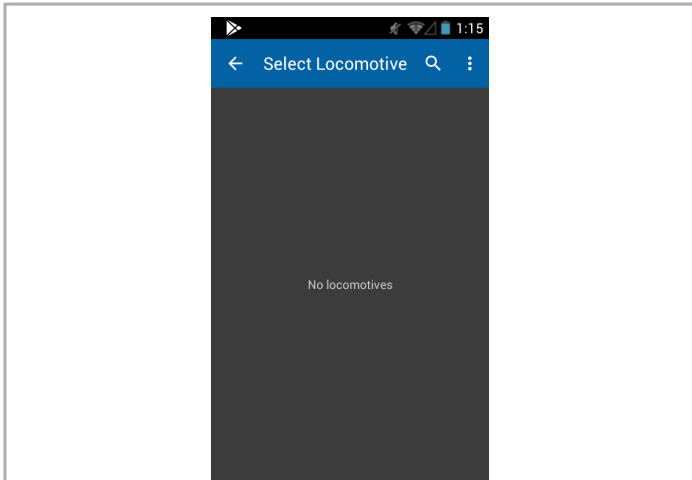


Figure 18: Main screen no locomotives

10.1. Main menu

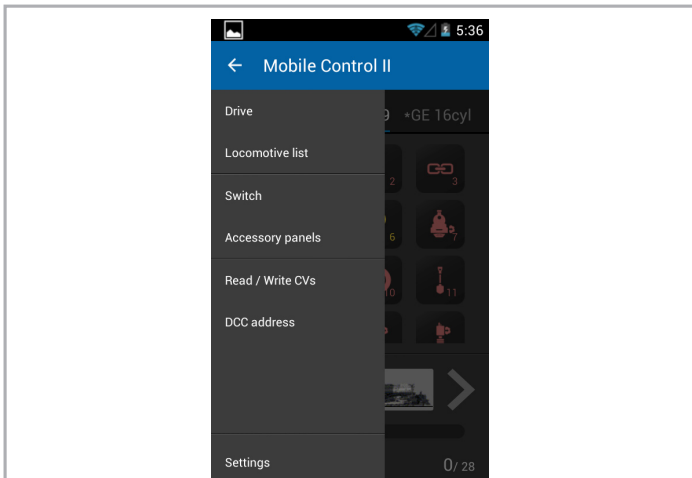


Figure 19: Main menu

The main menu is displayed as soon as you touch the appropriate button. You may also toggle between the basic functions "Running locomotives" or "Switching" in the main menu. In addition you can call up two lists:

- You can display all locomotives stored in the CabControl in the "Locomotive" list.
- You can display and select all available switching panels in the "Accessory control panel list".
- With "Reading / writing CVs" you can access the programming track.
- With "DCC address" you can read out and change the address of a locomotive on the programming track.
- The "Settings" button enables you to access the configuration menu. Find more information about this in chapter 13.

You may exit the main menu by pressing the touch button "Return" at the bottom right at any time.

10.2. Manual CV Programming

While the easiest method of changing the CVs of ESU decoders is to use the ESU LokProgrammer from time to time may need to manually adjust CVs with the CabControl system. We have provided some menu options to help facilitate this. Choose the Read/Write CVs menu from the main menu above.

On this screen you can read and write decoder CVs:

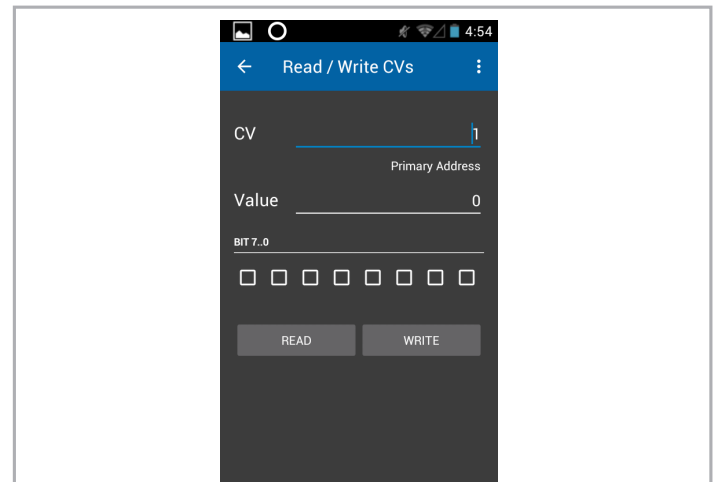


Figure 20: Read and write CVs

10.3. 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.

10.4. Write CV's

Programming new values is very similar to reading them. First enter the CV number you want to change.

Locomotives and consists

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.

10.5. 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 CabControl will automatically calculate which CV's to modify in order to enter a long address.



HOOK UP AND MOBILE CONTROL II OVERVIEW



11. Controlling locomotives and consists

The most important function of the Mobile Control II is controlling locomotives and consists. All locomotives stored in the CabControl ICU may be called up.

There are 2 ways to add a locomotive to the CabControl System:

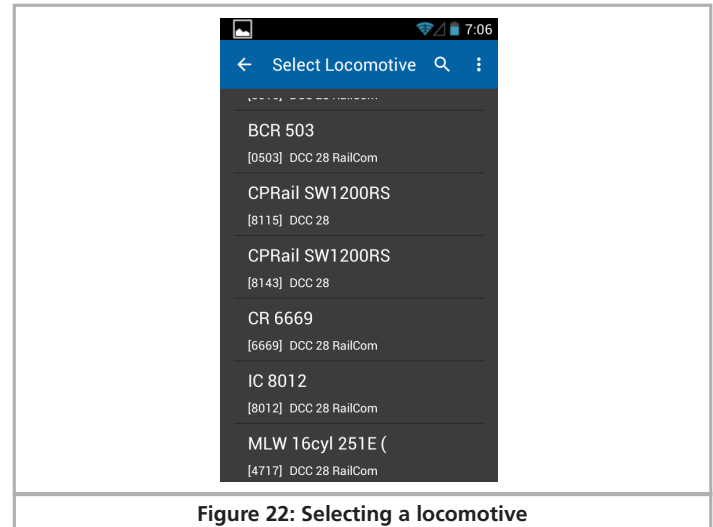
- Automatic Detection and Registration using RailComPlus equipped locomotives (All LokSound Selects and V4.0 Decoders have RailComPlus. If this is not working check your CV settings and see if it has been disabled.)
- Entering Locomotives manually. This will be the required choice for non RailComPlus decoders.

We will cover entering a loco into the system below in Section 11.5

11.1. Selecting a locomotive that is in the system already

First one must call up the locomotive that shall be operated.

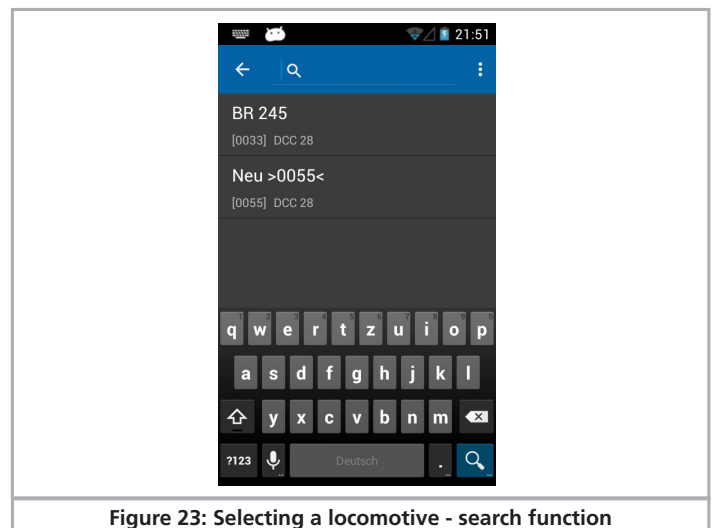
- Press the "+" symbol in order to enter the locomotive list.
- Select the desired locomotive by touching the icon.



11.1.1. Searching locomotives

If there are many locomotives in the list, one can accelerate the search by pressing the magnifier icon in order to call up the search.

- Type parts of the name or (if known) the address of the desired locomotive.
- The "hits" will be shown even while you are typing.



Functions

11.2. Running locomotives

You have direct access to a locomotive as soon as it has been selected.

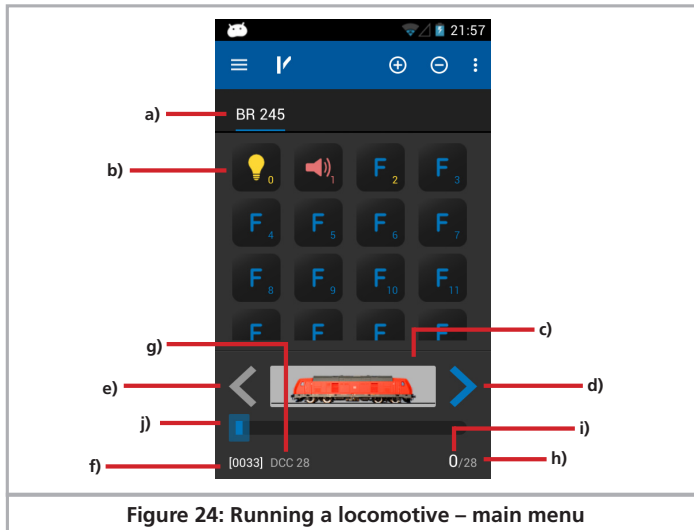


Figure 24: Running a locomotive – main menu

- List of all locomotives already called up ("Quick access list") with plain text name of the locomotive.
- Status of the functions of the currently controlled locomotive. The current status is displayed for each function (On or Off).
- Locomotive icon
- Direction "Forward"
- Direction "Back up"
- Locomotive address
- System Speed step setting (Adjustable 14/28/128)
- Speed steps: the maximum number of speed steps of the locomotive (subject to data format and protocol)
- Currently set speed step
- Speed step indicator

11.2.1. Speed & Direction

- Turn the throttle knob to the right and the locomotive will start moving. The speed step indicator will display the current speed immediately while the speed step is shown for accurate control.
- Turn the throttle knob to the left beyond Zero until you hear a "Click", then the direction of travel will be changed. The throttle knob is motorized. If you turn the throttle knob beyond Zero for changing the direction, simply let go of it afterwards. It will automatically return to the Zero position.

11.2.2. Functions

There is an icon for each function button describing the function more closely. In addition, a number located at the bottom right indicates the indenture number; starting with 0 at the top left (for the lighting button F0). In order to more easily recognize the type of function, the icons of the individual function groups (mainly physical functions, logical functions and sound functions) are displayed in different colors.

- Press the icon for turning on or off a function.
- Depending on whether a function is set as a continuous or a momentary function, the function may remain only active as long as you touch the icon with your finger. Every Function on the Mobile Control II throttle can be set to continuous (latching) or momentary.

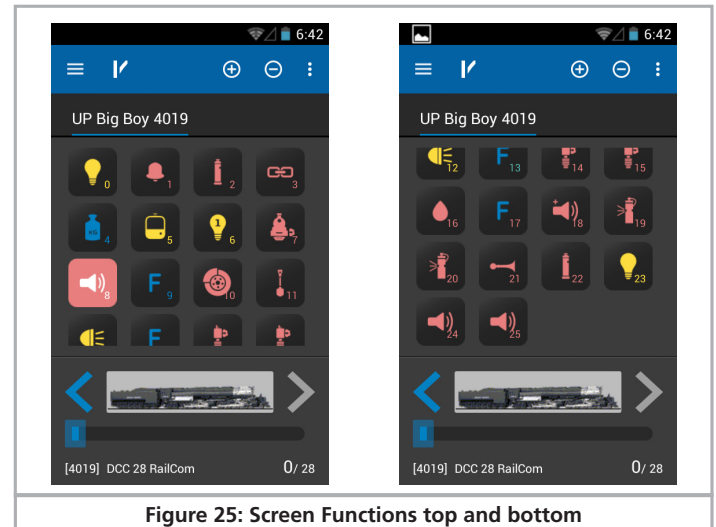


Figure 25: Screen Functions top and bottom

If a locomotive has more functions than can be displayed on the screen you can scroll by wiping from the bottom upwards (directly in the block with the function icons), giving you an overview over all 28 functions.

11.2.3. Changing locomotives

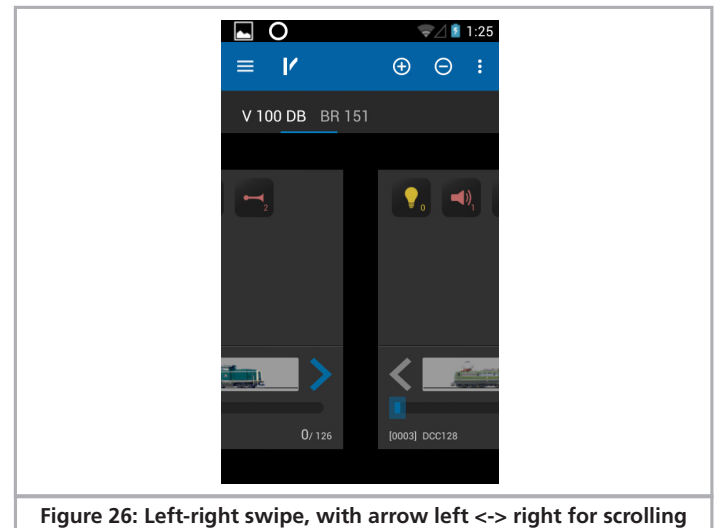


Figure 26: Left-right swipe, with arrow left <-> right for scrolling

Edit locomotives

If you wish to control another (additional) locomotive simply press the “+” button in order to access the locomotive choice list. Then select another locomotive as described in chapter 11.1. All locomotives are now shown in the quick access list. If you wish to call up the next locomotive and run it, then simply wipe to the left or right within the field of the function buttons.

The currently controlled locomotive (class V 100 DB in this example) is displayed bright and underlined. Every time you change to another locomotive the throttle knob will move to the appropriate position to match the locomotive speed setting.

11.2.3.1. Quick selection

With the method described you may easily select the next locomotive in the quick access list by wiping left or right. However, you may also select the desired locomotive directly.

- Touch and hold the name of the current locomotive in the quick access list until the quick selection menu appears.
- Choose the desired locomotive directly.

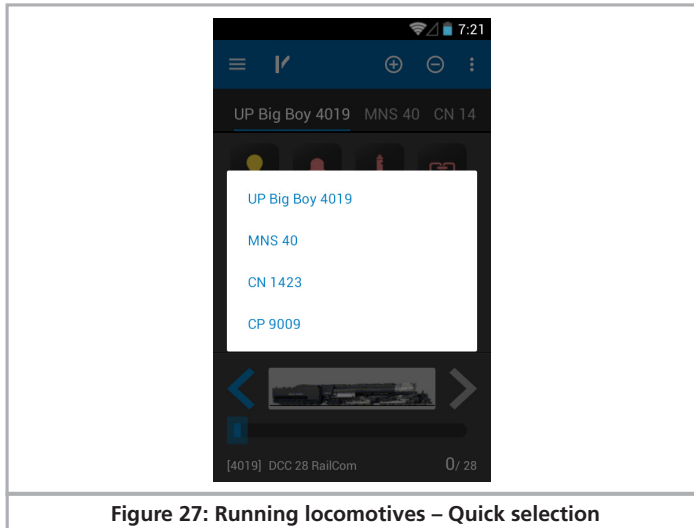


Figure 27: Running locomotives – Quick selection

11.3. Blocked locomotive

When you call up a locomotive it may happen that it may be displayed, but you cannot control it. In this case the text “Display only” will appear below the locomotive picture instead of the speed indicator. This means that this locomotive is currently controlled by another throttle.

In the CabControl Settings you may choose to adjust the “locomotive takeover” settings. This will allow you to “Steal” the locomotive from another throttle.

RUNNING LOCOMOTIVES

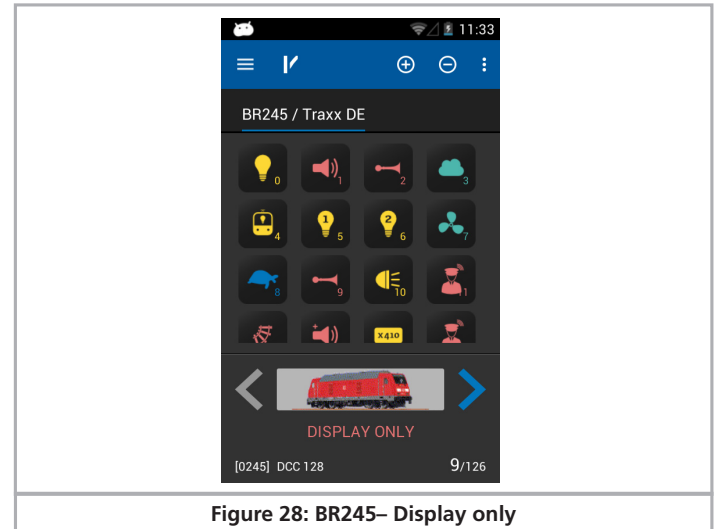


Figure 28: BR245– Display only

11.4. Edit locomotive

If you wish, you may edit the characteristics of a locomotive directly with your Mobile Control II. All changes will also be transferred to the CabControl ICU and other handsets. First press the menu button at the bottom left and select “Edit locomotive” from the menu.

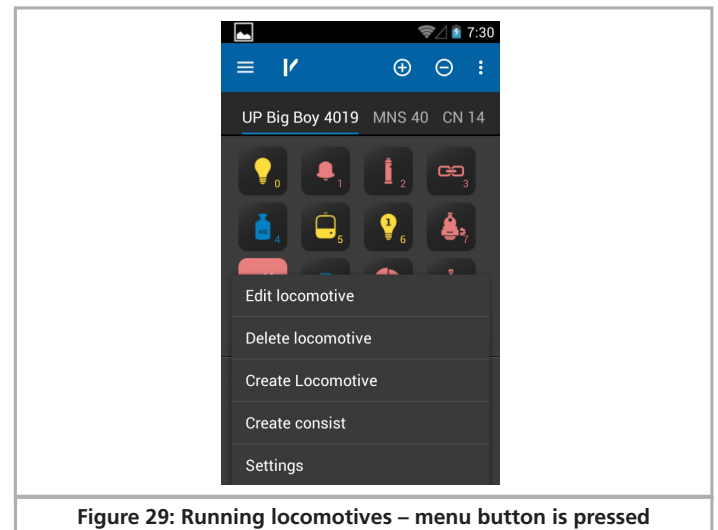


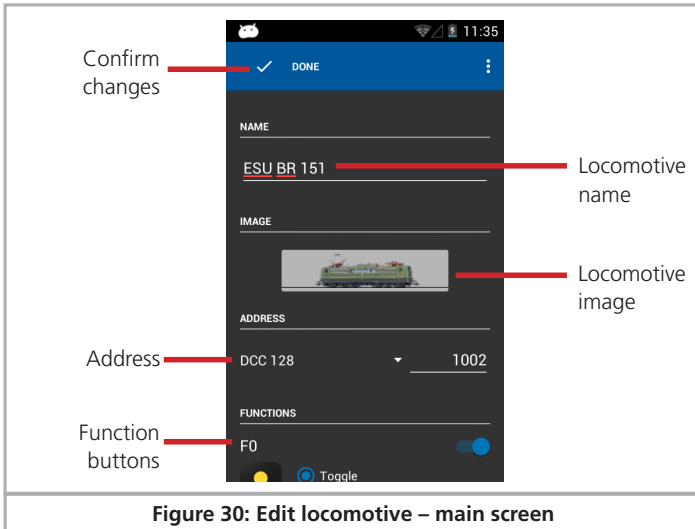
Figure 29: Running locomotives – menu button is pressed



In case the locomotive is blocked, then the function is not available.

After selecting the function, the “Edit locomotive” screen will open.

Edit locomotives



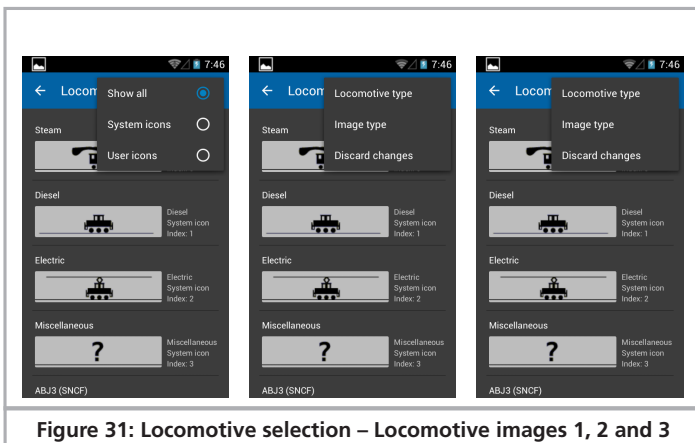
Once you have confirmed all changes press the "Save" button. For saving all changes press the "Return" button at the bottom right of the touch screen. If you do not wish to save any changes, press the menu button at the bottom left and select "Discard changes".

11.4.1. Locomotive name

Choose a meaningful name for your locomotive. It helps to find it quicker.

11.4.2. Symbol (Icon)

Touching the locomotive symbol opens the choice list of all available locomotive images. The Mobile Control II displays all images available on the CabControl. The icon has no influence on operations; it only serves for a quick visual differentiation of your locomotives. You have a choice between "System Icons" (ex works) images on your CabControl and "User Icons" defined images.



You may define if you only want to display internal images or user defined ones, or only steam, diesel or electric locomotive images in the context menu (touch button at the top right).



With the help of the locomotive icon the command station recognizes if it is a steam, diesel or electric locomotive. This differentiation comes in handy later on when you are searching a specific locomotive.

11.4.3. Speed Step Settings

In this choice list you may determine the speed step input of this specific locomotive. However, the command station will not check if this locomotive actually supports this. ESU decoders will automatically adjust, but not all decoder brands have this capability. If in doubt, read the relevant passages in the decoder manual respective to the decoder brand.

11.4.4. Address

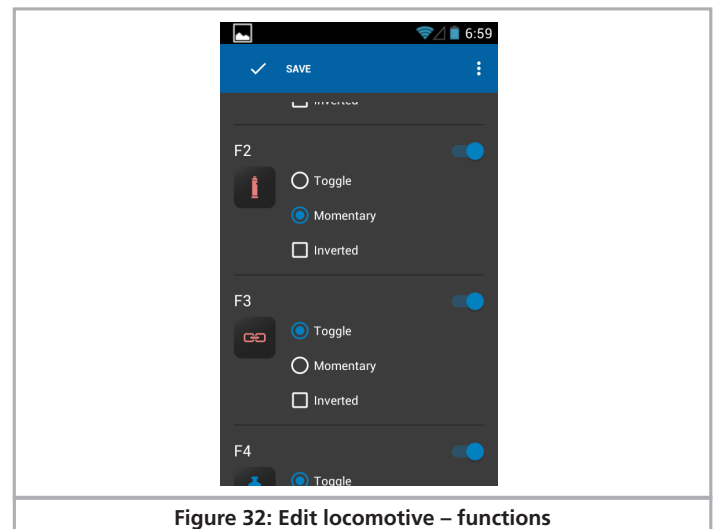
Here one must enter the current locomotive address. The valid address range may be limited. The locomotive will be controlled with this address on the layout.



If the locomotive has been registered automatically by RailComPlus and you then change the address here, the newly selected address will be written onto the decoder (programmed) once you have confirmed this change. In all other instances the address will not be written onto the decoder but must be programmed manually.

11.4.5. Function button icons

You may assign an icon to each function. One cannot only assign an icon for each locomotive and for each button, but one can also determine if it is continuous (latching) function or momentary function.



- Select the desired icon from the list for each function. For your orientation you will find its meaning illustrated next to the icon.

Edit locomotives

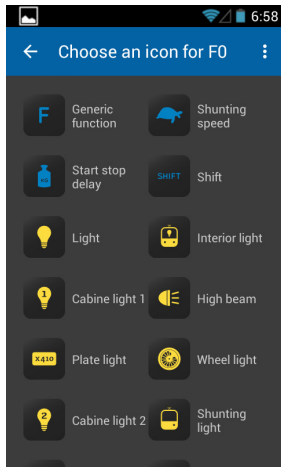


Figure 33: Edit locomotive – function icons

- Decide if the function should be continuous or momentary. Momentary functions only remain “On” as long as you touch the icon. Continuous output functions remain on until you touch the icon on the screen once again.
- If you do not wish to use a particular function button (icon), simply disable it with the switch at the top right.



A disabled function is not displayed on the “Running locomotives” screen. The other function buttons move up accordingly. If you want to have a gap, however, then you may achieve this by changing this feature in the settings menu.



Figure 34: Edit locomotive – Icon Names

CREATE AND EDIT LOCOMOTIVES



11.5. Setting up a new locomotive

When setting up new locomotives manually, the same remarks apply as described for editing locomotives. Please note that one should never assign a locomotive address twice. RailComPlus locomotives cannot be registered manually at all. They will always register automatically. They can however be edited once in the system.

11.5. Registering RailComPlus

Locomotives equipped with RailComPlus capable decoders automatically register with the CabControl command station. As soon as you have put a new locomotive onto the track, it will be automatically detected. It will immediately be displayed on the main screen of your Mobile Control II.

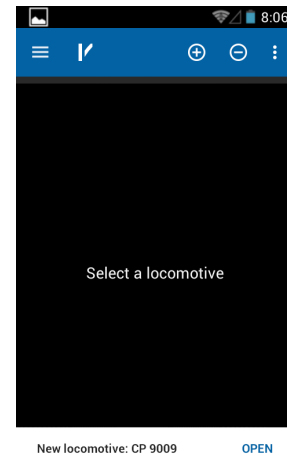


Figure 34: RailComPlus locomotive is registered

If you wish to run this newly registered locomotive with your hand set, simply touch “Open”. After a short while this notice disappears automatically.

Consists

11.6. Creating a Consist

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



Figure 35: Create consist

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.

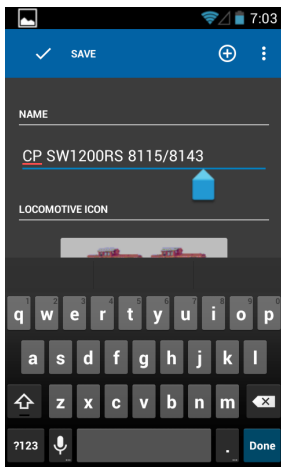


Figure 36: Name consist

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.



Figure 37: Add to consist

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: < >)

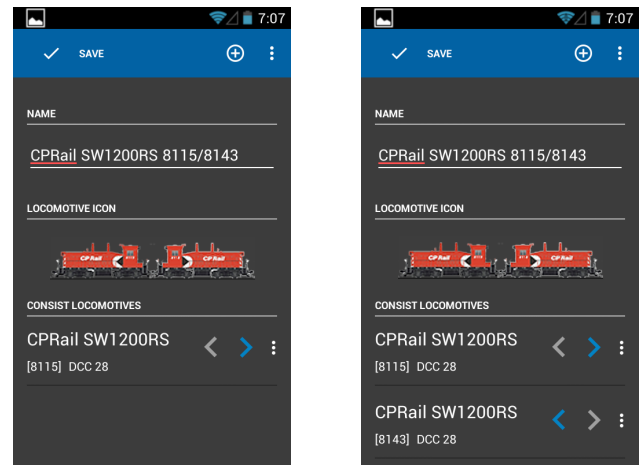


Figure 38: Add to consist 2 and 3

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. Also a locomotive can only be added to 1 consist at a time. You must delete the consist before that locomotive can be added to another consist.

CONSISTING VIDEO



12. Accessories & routes



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.

12.1. Panel mode (Route control)

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 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.

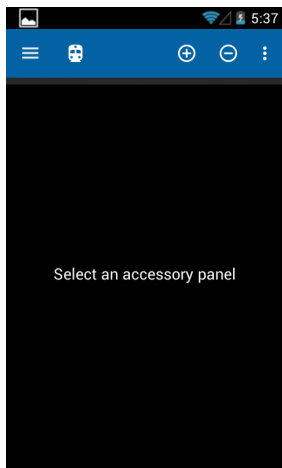


Figure 39: MC II Switching mode – empty screen

12.2. New panel

- Select "Create panel" from the context menu
- Enter a name for the panel

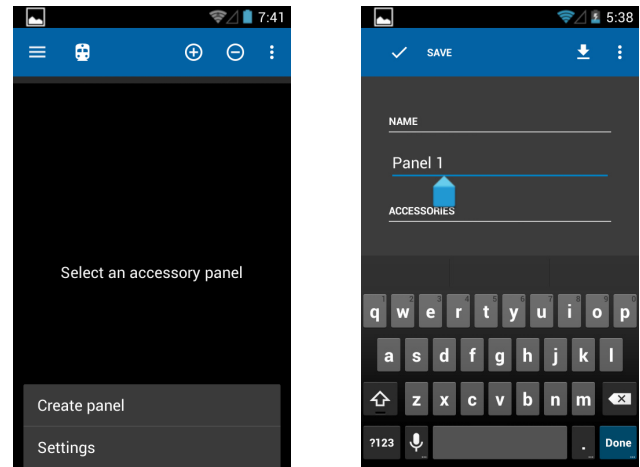


Figure 40: New panel context menu

12.2.1 Creating new accessories

At first there will be no accessories to choose from. By touching the desired position you can create a new accessory to control.

- Touch the desired position for placing the new accessory.
- Choose Create Accessory
- Name the Accessory
- Select the desired Accessory

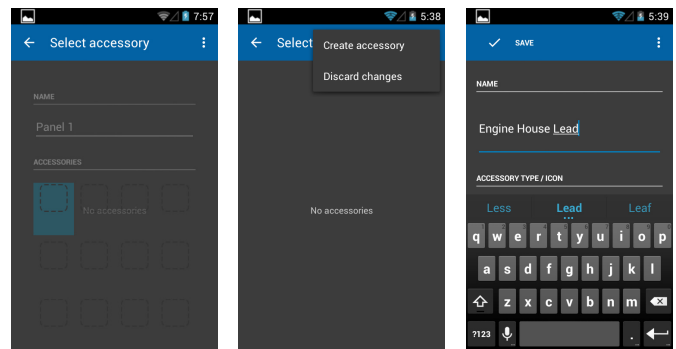


Figure 41: Create Accessory

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.

Accessory settings

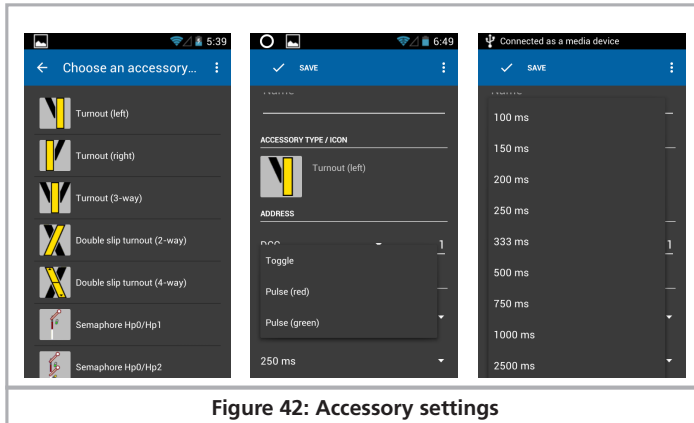


Figure 42: Accessory settings

12.2.2. Placing accessories

Of course you may now modify the panel to your liking and link more accessories.

- Touch the desired position for placing the new accessory.
- A list showing all accessories set up on your ECoS will open.
- Select the desired accessory.
- Once you have completed configuring the signal-box, press the "Finish" button in order to return to the main screen.

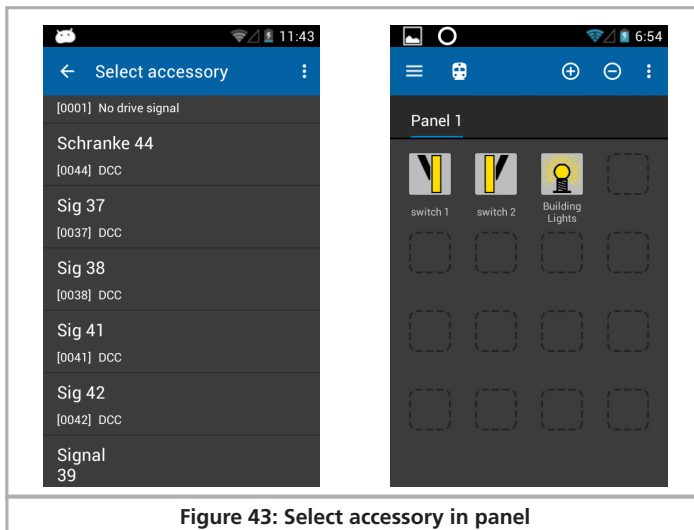


Figure 43: Select accessory in panel

12.3. Switching accessories

After successfully configuring the panel all accessories can be switched by touching the appropriate icon.

- The aspect of two-aspect accessories will be directly changed from one to the other.

- Three or four-aspect accessories: A small window with all possible aspects opens. Select the desired aspect. The window closes and the accessory will be switched.

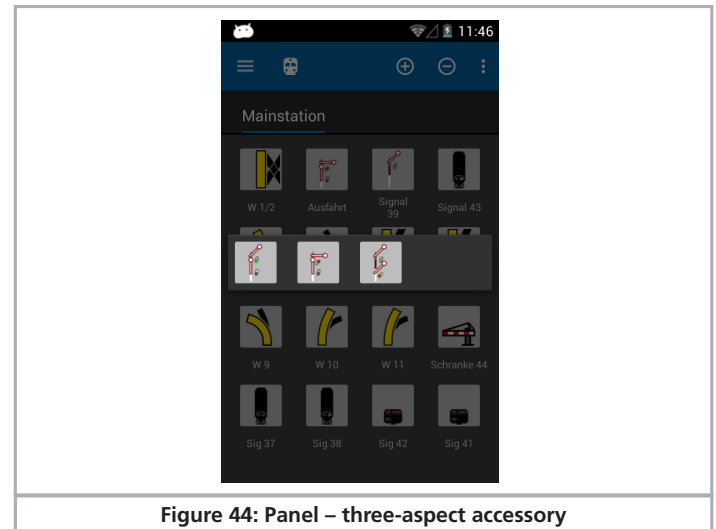


Figure 44: Panel – three-aspect accessory

12.4. Select panel

Similar to the locomotives you may toggle between panels

- Wipe in the area of the panel to the left or to the right in order to select the respective panel before or after.
- Press the "+" button in order to add a new panel into the quick access list.

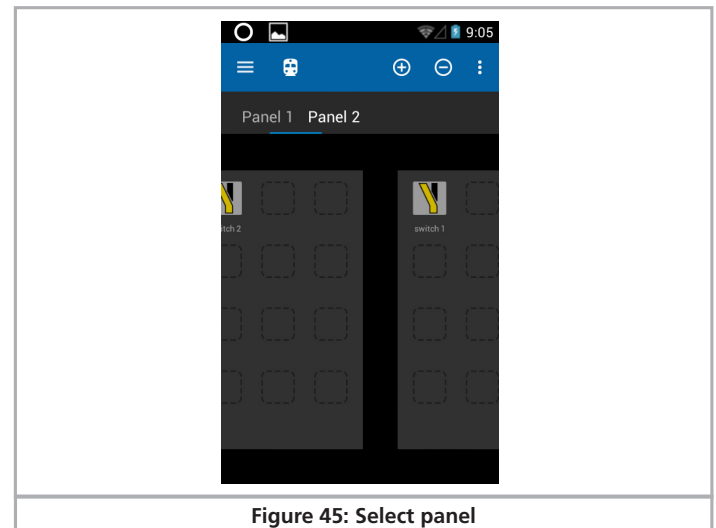


Figure 45: Select panel

Configuration menu

13. Configuration menu

As described in chapter 1.1 you may get to the “Settings” via the main menu, where you can set various options.

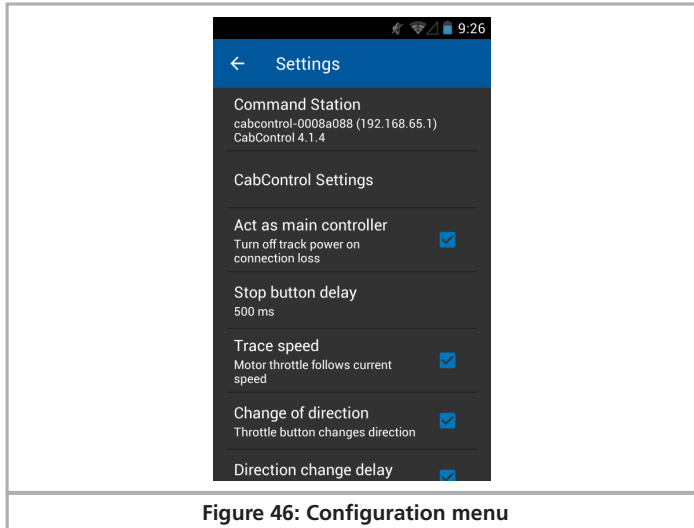



Figure 46: Configuration menu

13.1. Act as main controller

If you select the option “Act as main controller ” the CabControl will go to “Stop” in case the connection may be interrupted (e.g.: because of insufficient signal strength of the Wi-Fi system).

 If the App is terminated normally or the Mobile Control is shut down, then the track voltage is still on. This setting only relates to unusual disturbances or faults.

13.2. Stop delay

Normally, when pressing the “Stop” touch button, the track voltage will be switched off immediately. However, it may happen that due to the thickness of your thumb or the method of touching the touch screen, the movement of the throttle knob the stop button may be touched inadvertently. The stop delay helps against unintentional activation. It is recommended that this is set to 500 ms.

13.3. Trace speed

Normally the throttle knob follows the speed of the locomotive. In case of frequent changes of locomotives this may lead to short battery life. Therefore it is possible to turn off this feature of the throttle knob matching the speed setting.

13.4. Compact function view

Normally, function buttons not in use are faded out of the locomotive screen. If you prefer to keep the gaps between the active icons, simply deactivate the compact display.



Figure 47: Compact display DEACTIVATED

13.5. Keep screen on

If this option is set, then the screen will never be turned off until you exit the App.

13.6. Displaying the version number

The button “About Mobile Control II” shows the software version number of the Mobile Control II App. This is important if you have to contact our technical support.



Figure 48: Version number

CabControl settings

13.7 Assignment of buttons – Key Bindings

In the menu selection “Key Bindings” you can assign certain functions to the hardware buttons (two on the left, two on the right-hand side of the housing). The allocation is valid globally for all locomotives.

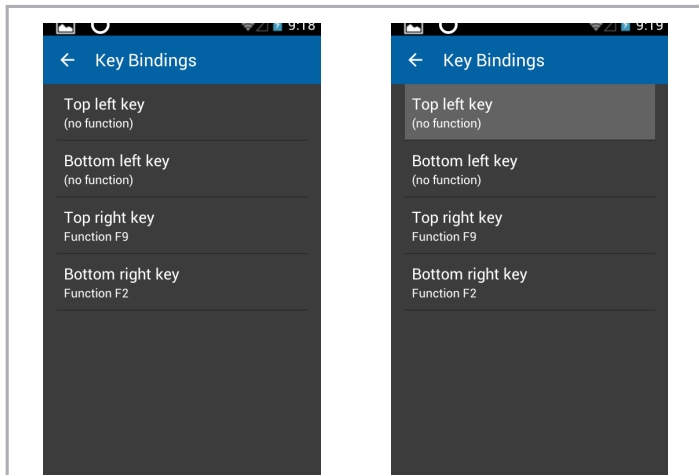


Figure 49: Set-up of assignment of buttons - overview

- Select the button you want to assign a function to.
- Choose the function to be assigned to this button from the list.

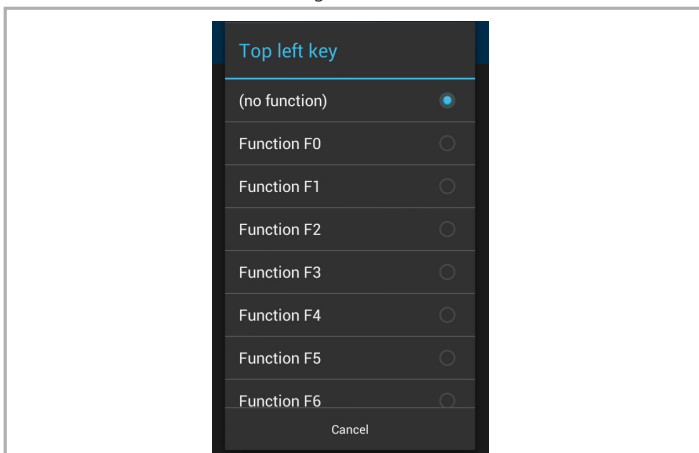


Figure 50: Assignment of functions – list of functions

14. CabControl Settings within the Configuration Menu

Once your CabControl ICU is connected to the Mobile Control II the “CabControl Settings” Options will be active.

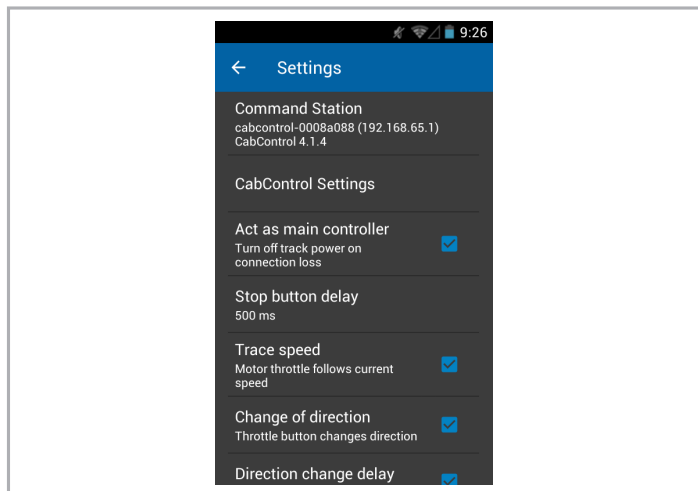


Figure 51: Configuration menu with CabControl

By pressing the “CabControl Settings” tab within the Configuration menu you can enter into another group of settings.

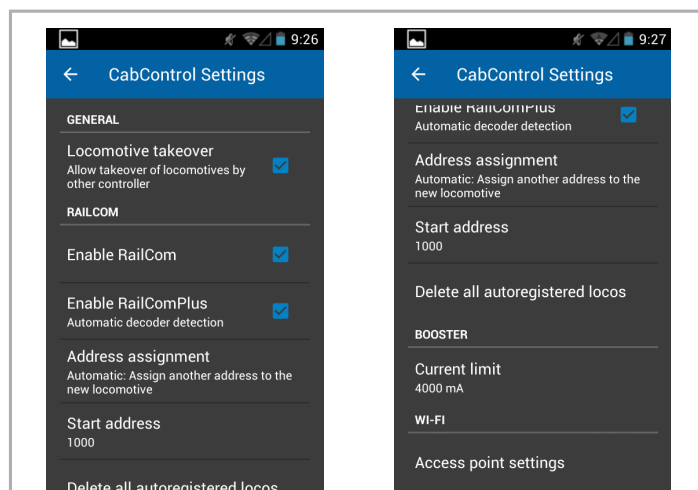


Figure 52: CabControl Settings

14.1. Locomotive Takeover

This option allows you to „steal“ a locomotive from another Mobile Control II throttle.

CONFIGURATION MENU / KEY BINDINGS



Address assignment

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 Mobile Control II. 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.

14.2. Enable RailCom/RailComPlus

This option controls whether the RailCom protocol is activated on the CabControl System.

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.

14.3. Address Assignment

Here you can decide what should happen if a loco with RailComPlus equipped decoder wants to register with the CabControl System.

Please note how the text changes when switching between "automatic" and "overwrite".

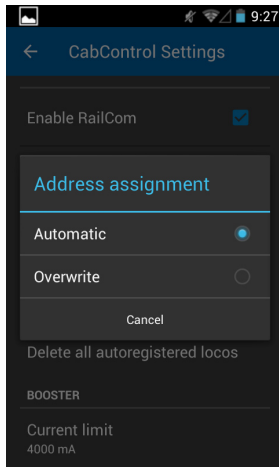


Figure 53: Address Assignment

14.4. 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 CabControl system uses when automatically assigning addresses. Alternatively, you can always configure a locomotive's address via CV-programming.

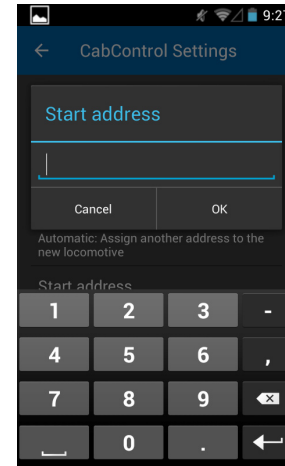


Figure 54: Start Address

14.5. 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.

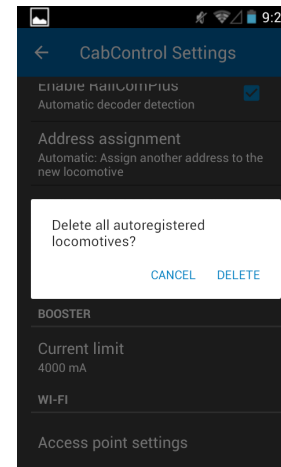


Figure 55: Delete all

14.6. Current Limit

The CabControl system 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.

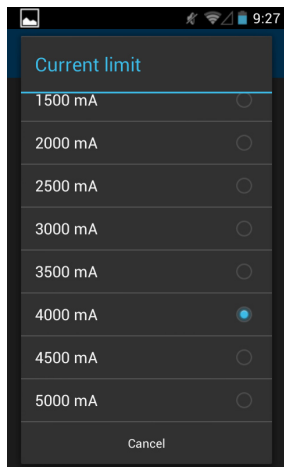


Figure 56: Current limit

14.7. 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 CabControls within one WiFi range.

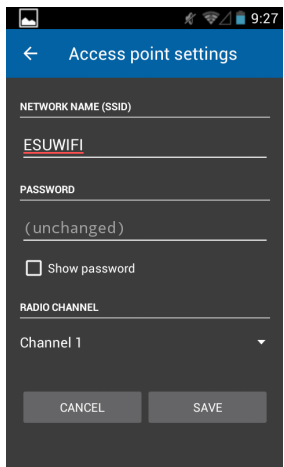


Figure 57: Access Point settings

15. Software update

Due to ongoing development your CabControl ICU and Mobile Control II hand set will need a software update from time to time.

15.1. Mobile Control II Update

In many instances the Mobile Control II will only be directly connected to the ESU CabControl ICU and therefore cannot be updated automatically. Should this be the case you can download the latest firmware version from the Download section of the ESU website.



Figure 58: Download area on the ESU website

First install the update software on your PC. It may be necessary to download and install certain Microsoft components from the Microsoft website. In this instance the installation will take a bit more time. After the installation has been completed you can start the software, which will search for a Mobile Control II at a USB port.

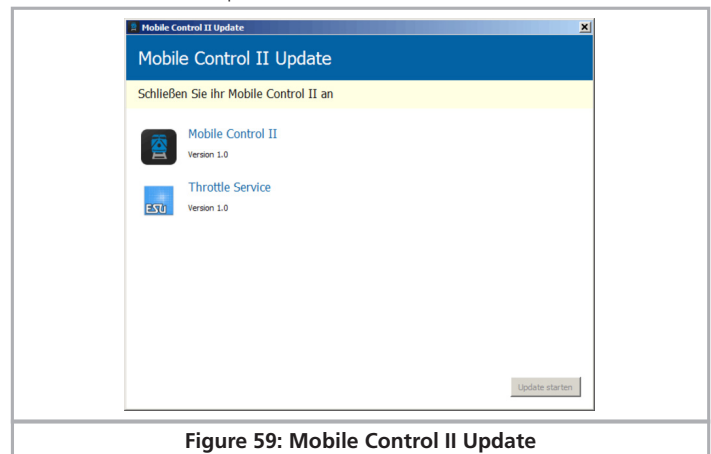


Figure 59: Mobile Control II Update

Now connect the meanwhile active Mobile Control II with a USB port of your computer. The device must be detected automatically. The software offers the update of both Apps automatically, which are provided by ESU for the Mobile Control II.

- The actual "Mobile Control II" App
- The ESU background process for controlling the throttle knob, known as the "ESU Input Services".

Click onto "Start update" in order to commence the update.

Software Update

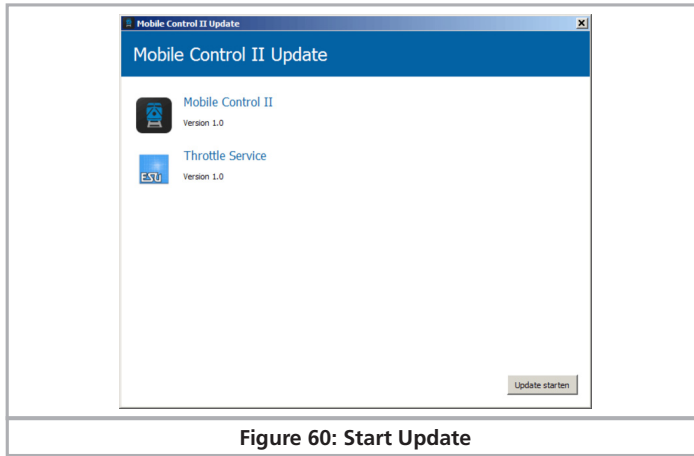


Figure 60: Start Update

For security reasons the Android operating system requires you to confirm the installation as the next step. Press the "Ok" button on the screen of your Mobile Control II handset. Then the operating system will display which authorizations are required by the Apps to be installed and asks you, if you agree. You must also confirm this by touching the "Install" button.

The first App will be installed after a few seconds. Now you must trigger the update of the throttle services by pressing the "Install next App" button on your PC. Here you must also confirm the process by pressing the "Ok" button on the screen of your Mobile Control II.

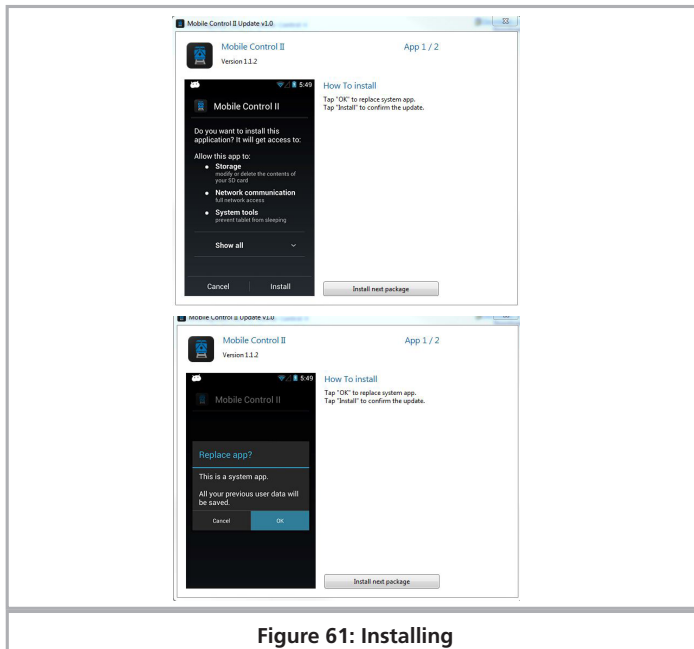


Figure 61: Installing

15.2. CabControl ICU Update

Any updates to the CabControl ICU can be downloaded from <http://www.esu.eu/en/downloads/software/>

1st Press and hold the Rescue/Update-button (8*) during booting the CabControl ICU will start in "rescue mode". Once the light comes on and stays on you can release the button. The CabControl is ready to update now.

To make an update you need to insert a specially prepared USB-stick**. The CabControl ICU should automatically identify the USB-stick and start to look for the update data.

**on occasion due to technical reasons it can be possible that the CabControl ICU cannot identify the USB-stick. In this case please try to use another USB-stick from another company. This is rare but like all computer hardware it is possible.

Preparing the USB-stick for the Update

The USB-stick has to be formatted to "FAT32" (choose under "file system").

After that, please create a folder on the stick named "CabControlUpdate" (please take care for small and capital letters. In this folder you have to put the update-file, which is usually called "ESU_CabControl_Update_date.bci".

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

Note: If any failure happens during this process the CabControl will cancel the update and remain in rescue-mode. The LED will light permanently. In this case just unplug the USB-stick and put it back in again.

After correct update the LED will stop blinking and the CabControl will reboot.

15.2. Backup and Restore / Rescue of the CabControl

Create a Backup-file

The CabControl offers the possibility to store your settings and data onto a USB-stick.

Just plug in a USB-stick when the CabControl is activated and push the button for "Backup". The CabControl will now create a new folder on the USB stick called "CabControlBackup". A text file will be stored to this folder.

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

Restore a Backup-file

Plug a prepared USB-stick into your CabControl and wait for ca. 5 seconds (time for the CabControl to identify the USB-stick). Then press the "Restore/Backup" button. The CabControl will now look for the Backup file and restore the data.

Please note that the connection between CabControl and Mobile Control II will be lost in this case. But you can easily restore the connection with WPS.



If there is more than one backup file stored on the USB-stick the CabControl will choose one of them randomly.

16. ESU Support

Should you have any specific questions regarding your Mobile Control II handset or your CabControl DCC System, you are welcome to raise such questions in our online forum. Before you can do that you must register with the forum.

16.1. Registration

In order to be able to provide you with optimal service we kindly ask you to register an account under <http://www.esu.eu/register>.

What are the advantages of this registration?

When you register, you enter the serial number of your CabControl System, amongst others, and thus your CabControl is automatically registered with us. Should there be any problems with the software or anything else, we could inform you directly about this. The most practicable way to do this is via the internet.

Furthermore you will have access to the latest software version after your successful registration. Registered users (!) can download the software free of charge from the software download area on our website.

All following software updates (at a later date) for your CabControl System will definitely be free of charge. Guaranteed. You may be assured of this. In addition, you may participate in the ESU user forum.

16.2. Forum

Since its introduction in late 2006 the ESU support forum has turned into one of the most successful internet platforms. You may ask any questions related to all ESU products in this forum. Our support team endeavours to resolve any issues or problems together with you. Thus everybody will profit from the knowledge of all participants since other users are permitted to provide answers as well.

16.3. Technical hotline

Your model train or hobby shop is your competent partner for all your questions regarding ESU CabControl as well as model trains in general.

You may also post your questions regarding ESU products in the Support Forum on our homepage under

www.esu.eu

The support forum is the preferred method for getting quick and competent answers. In the "Support" area on our homepage you will also find many hints regarding FAQs.

Of course you can also reach us using the more classical ways: For enquiries please use either email or fax and we will reply within a few days. Please do not forget to mention a return fax number or email address.

Please call our hotline only in case of complex enquiries that can't be dealt with by email or fax. The hotline is often very busy, you may encounter delays.

Of course we are always pleased to assist you.

17. Appendix

17.1 Technical data

Radio transmission system:	2.4GHz WLAN system. 150Mbps 802.11 b/g/n
Display:	3.2 inch display with 800x480 pixels
CPU:	ARM Cortex A8
RAM:	512 MB DDR2
ROM:	2 GB Flash Memory
Operating system:	Google Android 4.1. "Jelly Bean"
Dimensions:	171 mm x 60 mm x 25 mm
Weight:	232,7 gram (including battery)
Battery:	LiPo rechargeable battery 3.7V, total charge: 1650mAh

17.2. Throttle knob API (Application programming interface)

You are welcome to integrate your Mobile Control throttle knob into your own Apps if you want to. You will find all necessary sources and source codes on the specially set up github website:

<https://github.com/esugmbh/mobilecontrol2-sdk>

Warranty certificate

18. Warranty certificate

24 Months warranty form date of purchase.

Dear customer,

Congratulations on purchasing this ESU Mobile Control II set. This high quality product was manufactured applying the most advanced production methods and processes and was subject to stringent quality checks and tests.

Therefore ESU electronic solutions ulm GmbH & Co. KG grants you a warranty for the purchase of ESU products that far exceeds the national warranty as governed by legislation in your country and beyond the warranty from your authorised ESU dealer. ESU grants an extended -

manufacturer's warranty of 24 months from date of purchase.

18.1. Warranty conditions

This warranty is valid for all ESU products that have been purchased from an authorised ESU dealer.

Any service, repair or replacement under this warranty requires proof of purchase. The filled in warranty certificate together with the receipt from your ESU dealer serves as proof of purchase. We recommend keeping the warranty certificate together with the receipt.

In case of a claim please fill in the enclosed failure report card as detailed and precise as possible and return it with your faulty product.

18.2. Extent of warranty / exclusions

This warranty covers the repair or replacement free of charge at the discretion of ESU electronic solutions ulm GmbH & Co. KG of any faulty part that is caused by design faults or faults in production, material or transport. Any further claims are explicitly excluded.

The warranty expires:

1. In case of wear and tear due to normal use.
2. In case of modifications of ESU – products with parts not approved by the manufacturer.
3. In case of modification of parts, particularly missing shrink sleeves, or wires directly soldered to the decoder.
4. In case of inappropriate use (different to the intended use as specified by the manufacturer).
5. If the instructions as laid down in the user manual by ESU electronic solutions ulm GmbH & Co. KG were not adhered to.

Due to liability reasons any inspections or repairs can only be carried out on products that are not installed in a locomotive or coach. There is no extension of the warranty period due to any repairs carried out by ESU or replacement of parts or of the entire product.

You may submit your warranty claims either at your dealer or by shipping the product in question with the warranty certificate, the receipt of purchase and the fault description directly to ESU electronic solutions ulm GmbH & Co. KG at:

**ESU LLC
23 Howard Street
Montoursville PA 17754
USA**



ESU P/N 00717-18804