

Mobile Control Pro

Instruction manual

1. Edition, May 2025



Table of contents

1. Declaration of Conformity	3
2. WEEE Declaration	3
3. Important Notes – Please Read First.....	3
4. Package Contents	4
5. Introduction – What Mobile Control Pro Can Do	4
5.1. Open Platform	4
5.2. Wi-Fi Transmission	4
5.3. Ergonomics	4
5.4. Controlling Locomotives.....	4
5.5. Accessories and Routes	5
5.6. CV Programming	5
6. Controls of the Hand Controller	5
7. Setup and Connection to the Digital System	5
7.1. Battery	5
7.2. Lanyard	6
7.3. Connection Types.....	6
7.3.1. Independent Standalone Operation.....	6
7.3.2. Connection to the Home Network	6
7.4. Operation with ESU ECoS - Isolated Operation	7
7.4.1. Connecting the Access Point	7
7.4.2. ECoS Settings	7
7.4.2.1. Setting the Hostname	7
7.4.2.2. Network Settings	7
7.4.2.3. Access Point Network Name and Password	8
7.5. Operation with ESU ECoS - Home Network	8
7.5.1. Connecting to the Router	9
7.5.2.1. Setting the Hostname	9
7.5.2.2. IP Settings	9
7.6. Operation with ESU CabControl - Isolated Operation	9
7.7. Operation with Roco® Z21® - Island Operation	10
7.8. Operation with Märklin® Central Station® 3 - Home Network	10
7.9. Operation with WiThrottle™ Command station - Isolated Operation	11
8. Initial Operation of Mobile Control Pro	11
8.1. First Start - Important Basic Settings	11
8.1.1. Language Selection.....	11
8.1.2. Connecting to Wi-Fi.....	12
8.1.3. Selecting the Digital Command Station	13
8.1.3.1. Demo Mode	13
9. General Android Features	13
9.1. Main Screen.....	13
9.2. Setup	14
9.2.1. Language.....	14
9.2.2. Display	14
9.2.2.1. Brightness	14
9.2.2.2. Automatically turn off the display	14
9.3. Programs	14
10. The App Main Screen	15
10.1. Main Menu	15
10.2. Restoring the App "Task Manager"	15
11. Controlling Locomotives and Trains	15
11.1. Selecting a locomotive	16
11.1.1. Searching for Locomotives	16
11.2. Operating Locomotives	16
11.2.1. Speed & Direction	17
11.2.2. Functions	17
11.2.3. Changing Locomotives.....	17
11.2.3.1. Quick Selection	17
11.3. Blocked Locomotive	18
11.3.1. Allowing Locomotive Takeover on the ECoS	18
11.4. Creating a New Locomotive Manually	18
11.4.1. Locomotive Address	18
11.4.2. Data Format.....	19
11.4.3. Locomotive Name	19
11.4.4. Symbol	19
11.4.5. Function Key Symbols	19
11.4.6. Speed Unit.....	19
11.5. Editing a Locomotive.....	20
11.5.1. Address	20
11.6. Registering RailComPlus or M4 locomotives	20
11.7. Braking Functions	20
12. Consists	21
12.1. Creating a Consist	21
12.2. Operating a Consist	22
12.2.1. Operating a Locomotive Individually in a Consist	22
12.2.2. Consist Quick Management	22
13. Accessories & Routes	22
13.1. Accessory Panel Mode	22
13.2. New Accessory Panel	23
13.2.1. Accessory Download from ECoS.....	23
13.2.2. Placing Accessories	23
13.3. New Accessory.....	24
13.4. Editing or Deleting Accessories.....	24
13.5. Operating Accessories.....	24
13.6. Selecting an Accessory	25
14. Operation with WiThrottle™ or Z21®	25
14.1. Databases	25
14.2. Managing Databases	25
14.3. Transferring Databases	26
15. Operation with Märklin® Central Station®	27
15.1. Locomotive Symbols	27
16. Configuration Menu	27
16.1. Command station connection	28
16.2. Main Control	28
16.3. Stop Delay	28
16.4. Speed Follow	28
16.5. Direction Change	28
16.6. Delay	28
16.7. Interactive Speed Display.....	28
16.8. Speedometer Display	28
16.9. Compact Display.....	28
16.10. Keep Screen Active	28
16.11. Speed Unit.....	28
16.12. Invert Brake Controller	28
16.13. Key Assignment	28
16.14. Calibrating the Rotary Knob.....	29
16.15. Display version number	29
16.16. Check for Updates	29
17. Software Update	29
17.1. Wi-Fi Update.....	29
17.2. PC Software	30
18. ESU Support	31
18.1. Registration	31
18.2. Forum	31
18.3. Technical Hotline.....	31
19. Appendix.....	31
19.1. Technical Specifications	31
19.2. Dial Control API	31

Declaration of Conformity

1. Declaration of Conformity

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

50115 ESU Mobile Control Pro Set

50116 ESU Mobile Control Pro

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

In accordance with the provisions of Directive 88 / 378 / EWG – 89 / 336 / EWG – 73 / 23 / EWG ETSI EN300 328:2007-04

The Mobile Control Pro bears the CE mark.

2. WEEE Declaration

Disposal of old electrical and electronic equipment (valid in the European Union and other European countries with separate collection systems). This symbol on the product, packaging, or documentation indicates that this product must not be treated as household waste. Instead, it should be taken to an appropriate disposal point for recycling electrical and electronic equipment. Proper disposal of this product helps prevent negative environmental impacts and health hazards caused by improper disposal. Recycling materials will preserve our natural resources. For more information about recycling this product, please contact your local municipal office, waste collection service, or the store where you purchased this product.



Batteries must not be disposed of in household waste!

Please do not dispose of empty, used batteries in household waste. Take them to a collection point in your community or at a specialized retailer. This ensures environmentally friendly disposal.

3. Important Notes – Please Read First

Congratulations on purchasing the Mobile Control Pro. The Mobile Control Pro allows you to wirelessly control your locomotives in conjunction with your Digital Command Station. This Android-based professional hand controller combines the user-friendly operation of a smartphone with the specific requirements of model railway enthusiasts regarding the user interface.

The Mobile Control Pro uses Wi-Fi to connect to the Digital Command Station. The app provided by ESU can connect to a variety of Digital Command Stations. Thus, the Mobile Control Pro is not limited to use with ESU command stations: Compatible units include the ESU ECoS Command Station, ESU CabControl, Märklin® Central Station® 3, ROCO® Z21®, or any other command station that implements the WiThrottle™ protocol server-side, such as Digitrax™ LNWI, Uhlenbrock Intellibox® Neo, WiFiTrax Cab Bus Wi-Fi Interface for NCE™, or MRC™ Prodigy Wi-Fi Interface, among many others. JMRI is also supported.

Thanks to its ergonomic design with a motorized rotary knob, four programmable buttons, an analog „brake slider“ on the right side, and the Android operating system, controlling your model railway has never been easier.

This manual aims to guide you step-by-step through the features of the Mobile Control Pro. Please note the following:

- Mobile Control Pro is exclusively intended for use with model railway systems. Never operate the Mobile Control Pro unattended or use it to control devices that transport people.
- The Mobile Control Pro may only be used with the components described in this manual. Any use other than that described in this operating manual is not permitted.
- The Mobile Control Pro operates with WLAN technology in a reserved area of the 2.4 GHz frequency band. Interference from other devices is highly unlikely.
- Do not drop the Mobile Control Pro, expose it to impacts or shocks, or shake it. Such rough handling may damage internal components.
- Do not expose the Mobile Control Pro components to moisture or direct sunlight.
- Do not use corrosive chemicals, cleaning solutions, or harsh cleaning agents to clean the Mobile Control Pro. Clean the display with a dry (microfiber) cloth.
- Do not attempt to open the housing of the Mobile Control Pro. Improper handling may damage the device.

Copyright 1998 - 2025 by ESU electronic solutions ulm GmbH & Co KG. Errors, changes serving technical progress, delivery possibilities, and all other rights reserved. Electrical and mechanical specifications as well as illustrations are provided without guarantee. Any liability for damages and consequential damages due to improper use, non-compliance with this manual, unauthorized modifications, etc., is excluded. Not suitable for children under 14 years. Improper use may result in injury.

Märklin® and mfx® are registered trademarks of Gebr. Märklin and Cie. GmbH, Göppingen. RailCom® is a registered trademark of Lenz Elektronik GmbH, Giessen. WiThrottle™ is a registered trademark of Brett Hoffman. Android® and Playstore® are registered trademarks of Google Inc. All other trademarks are the property of their respective owners.

ESU electronic solutions ulm GmbH & Co. KG continuously develops its products according to its policy. ESU reserves the right to make changes and improvements to any of the products described in the documentation without prior notice.

Reproduction of this documentation in any form requires prior written permission from ESU.

Introduction – What Mobile Control Pro Can Do

4. Package Contents

Please check the completeness of your Mobile Control Pro after opening the packaging.

In the packaging for item number 50116, the following components should be included:

- Mobile Control Pro hand controller
- USB A to C charging cable
- Lanyard
- (This) operating manual

If you purchased the set with item number 50115, the following additional components should be included:

- Mini Access Point KX-AP300
- Plug-in power supply for the Mini Access Point
- RJ45 network cable, approximately 30 cm in length



Fig. 1: Package contents of the Mobile Control Pro set

5. Introduction – What Mobile Control Pro Can Do

With the Mobile Control Pro, you have acquired a system that can do far more than „just“ wirelessly control locomotives. This section introduces the capabilities of the Mobile Control Pro.

5.1. Open Platform

The Android 10-based Mobile Control Pro is as easy to operate as your smartphone or tablet, thanks to its high-resolution touchscreen. The operating system ensures standardized, intuitive operation.

The Mobile Control Pro is equipped with a powerful quad-core ARM processor and ample storage, allowing for the installation of numerous apps. The built-in Wi-Fi module supports common WLAN standards in the 2.4 GHz range as well as popular Bluetooth standards. Thanks to the standardized wireless interface, interference-free operation of your model railway system is guaranteed.

The wireless range can be extended using Wi-Fi repeaters if needed. The built-in lithium-polymer battery, which can be easily replaced, if necessary, provides approximately four to six hours of operation. To charge, simply connect the Mobile Control Pro to your mobile phone's USB charger or any other USB port. The use of a low amp charger, while slower, is preferable to preserve battery integrity.

Using the pre-installed Aurora App Store, you can install additional Android apps at any time. A Google account is not required.

5.2. Wi-Fi Transmission

The wireless transmission of the Mobile Control Pro is based on the proven open WLAN standard. This offers many advantages for users:

- The reserved frequency band with numerous automatically selected channels minimizes interference from other wireless devices.
- Data transmission is fast and reliable in both directions, ensuring nearly delay-free locomotive response.
- The wireless range can be extended using standard Wi-Fi repeaters, which is particularly useful for larger layouts or outdoor setups.

5.3. Ergonomics

When you first hold the Mobile Control Pro, you will immediately notice its excellent ergonomics: All controls can be reached with one hand, and the most important functions can even be operated „blindly,“ allowing your focus to remain on your layout and trains. This is made possible by the central motorized rotary knob with end stops, which allows for precise speed adjustments and direction changes.

Two buttons on each side of the device can be freely assigned to various functions, such as direction changes or activating key features. Alternatively, the touchscreen can be used.

A standout feature is the analog „slider“ on the right side, which enables fine-tuned braking for locomotives equipped with LokSound 5 decoders, allowing for more realistic control. See Chapter 11.7 for details.

5.4. Controlling Locomotives

In locomotive mode, you can always see key operational parameters such as the locomotive name, symbol, speed, and the status of function keys. Speed can be adjusted using the rotary knob. Depending on the data format, up to 30 locomotive functions plus lighting functions can be controlled.

Operating elements

5.5. Accessories and Routes

The Mobile Control Pro can also handle accessories and routes. Depending on the command station used, you can define accessory panels where switches, signals and routes can be placed and controlled. Symbols and signal terms are adopted directly from the command station whenever possible.

5.6. CV Programming

Depending on your command station's capabilities, reading and writing CVs (Configuration Variables) is possible both on the programming track and the main track.

6. Controls of the Hand Controller

First, we would like to explain the controls of the hand controller, as shown in Figure 2:

- a) Power Button: A long press on this button turns the Mobile Control Pro on or off. Press the button until the ESU logo appears. If the device is connected to the charger, press the button briefly once, then press it a second time and hold it until the ESU logo appears. This may take up to 10 seconds. When the device is running, a short press on the power button puts it into standby mode. If the device is on but the screen is dark, a short press on the button will turn the display back on.
- b) USB-C Charging Port: This port is used for charging the device or connecting it to a PC.
- c) Motorized Rotary Knob: The rotary knob with end stops is used to adjust the speed. Turning counterclockwise to the stop changes the direction of travel. The rotary knob is motor-assisted and adjusts to the required speed.
- d) Touch Buttons: Four system buttons are arranged on the screen:
 - 1. **Task**: Opens a list of all active apps that can be accessed.
 - 2. **Home**: Pressing the home button takes you to the Android home screen at any time.
 - 3. **Back**: This button navigates back one step in menus and apps.
 - 4. **Emergency Stop**: Touching STOP (when the Mobile Control app is active) turns the track power off (Red LED) if already on. Another touch turns track power back on (Green LED).
- e) Side Buttons (Left and Right): These four side buttons can be freely assigned to function keys.
- f) Brake Slider: This analog „slider“ can optionally be assigned a braking function.
- g) Headphone Jack: This 3.5 mm headphone jack is compatible with Samsung headsets or external speakers.
- h) Lanyard Loop: A loop for attaching the included lanyard.
- i) Charging Contacts for External Docking Station: These contacts are for the external docking station (item number 50005).

7. Setup and Connection to the Digital System

7.1. Battery

The Mobile Control Pro is powered by a built-in lithium-polymer battery, which typically provides about four to six hours of operating time. To charge, connect the USB-C port using the included USB charging cable to a standard USB charger or directly to a USB port on your computer. Any USB charger, such as those used for mobile phones, can be used. The use of a low amp charger, while slower, is preferable to preserve battery integrity.



Fig. 2: Mobile Control Pro with operating elements

Setup and Connection

i It is recommended to fully charge the battery before first use and only then turn on the device.

i While charging, the Mobile Control Pro can still be used, but depending on the charger, the touchscreen may not respond accurately.

! Even when completely turned off, the battery will discharge within approximately four weeks if not used.

The battery can be replaced at the end of its lifespan. Replacement batteries are available under item number 50113.SP.01 from ESU.

7.2. Lanyard

The included lanyard can be threaded through the loop at the bottom of the Mobile Control Pro. It is recommended to always wear the device around your neck to prevent accidental drops.

7.3. Connection Types

You must first decide how to establish the wireless connection between your command station and the hand controller. The approach depends on the command station used. Generally, there are two options.

7.3.1. Independent Standalone Operation

In this mode, the command station itself creates a Wi-Fi network. This can be done using an external Wi-Fi module (e.g., ESU EcoS, ROCO® Z21®) or an internally built-in module (e.g., ESU CabControl, Uhlenbrock Intellibox® Neo).

Figure 3 illustrates the basic connection. The wireless hand controller must connect to the Wi-Fi network created by the command station. This network either has a fixed name or can be freely chosen. The configuration of the Wi-Fi password and IP settings can either be done on the command station or is predefined. The entire system operates autonomously without an internet connection, making it ideal for exhibition layouts that are frequently set up and taken down.

This mode is recommended for users with little experience in setting up home networks and who do not require an internet connection.

! Neither the command station nor the Mobile Control Pro will have internet access. To update the devices, they must temporarily be connected to a PC.

7.3.2. Connection to the Home Network

In this mode, the command station is connected to the home network using the built-in network interface (LAN port with RJ45 connector). This is often done with an ESU EcoS, but the Märklin® Central Station® 3 can also be used this way.

Figure 4 shows how this is done using a cable plugged into a free network port on the internet router (e.g., AVM® Fritzbox®). The internet router creates a Wi-Fi network and manages the IP settings. The Mobile Control Pro connects to your home Wi-Fi in the same way as your mobile phone, tablet, or notebook computer.

! In this mode, the Mobile Control Pro can also download updates and other data from the internet while simultaneously controlling the model railway.

We recommend connecting to the home network. This ensures your Mobile Control Pro stays up-to-date, and updates do not need to be manually initiated.



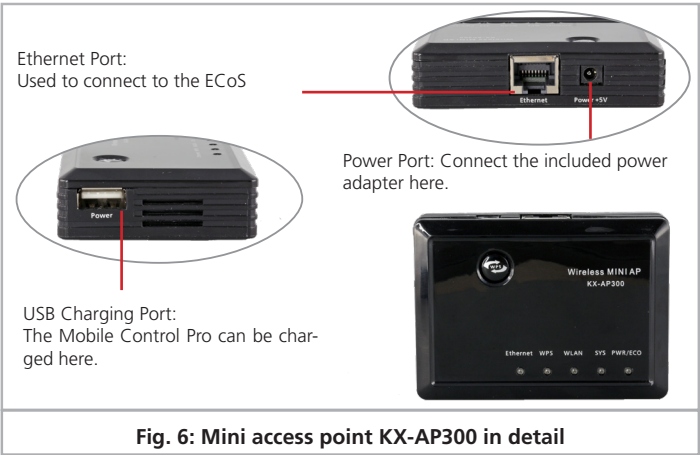
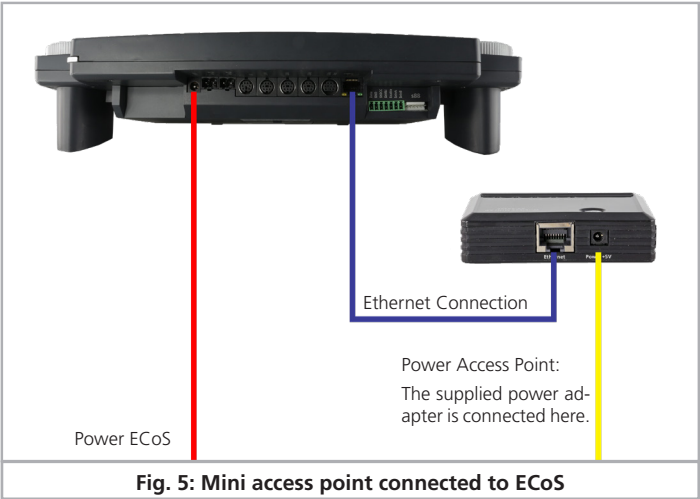
Operation with ESU ECoS - Isolated Operation

7.4. Operation with ESU ECoS - Isolated Operation

In this scenario, the ECoS and Mobile Control Pro combination operates independently of other network components in your household. You will need a Wi-Fi access point (normally the KX-AP300 mini access point included with the set, item 50115), which is connected directly to the network socket of the ECoS. The mini access point creates its own Wi-Fi network, to which only the Mobile Control connects. All settings regarding passwords, network names, etc. are configured directly on the ECoS screen. No PC is required, nor is a PC connection provided.

7.4.1. Connecting the Access Point

For isolated operation to work, you must first connect the mini access point to your ECoS using the included network cable. A power outlet is also required.



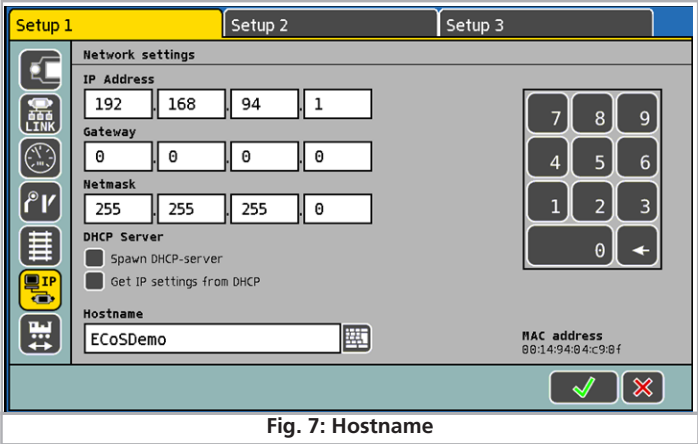
7.4.2. ECoS Settings

First, some settings must be made in the ECoS setup menu so that your Mobile Control Pro can connect smoothly.

i All screenshots show an ECoS 50220, but are also available on monochrome screens.

7.4.2.1. Setting the Hostname

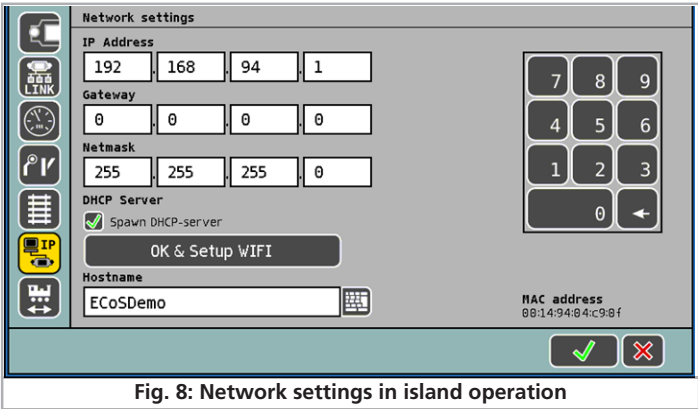
You should first give your ECoS a network name. This name will later be displayed on the Mobile Control Pro display and serves as a distinguishing feature if multiple ECoS control units are in a network.



7.4.2.2. Network Settings

Then open the setup menu on your ECoS and go to the IP setup in Setup 1.

- If selected, first uncheck "Obtain address settings via DHCP".
- Then enter an address under "IP Address" e.g., 192.168.94.1
- Enter 255.255.255.0 under "Netmask".
- Check the box next to "Start own DHCP server".



Operation with ESU ECoS - Home Network

7.4.2.3. Access Point Network Name and Password

In the next step, you need to change the Wi-Fi network name and password. If you don't change these, any Mobile Control Pro can connect to your ECoS, which is certainly undesirable.

- Press the "OK & Setup WIFI" button.
- The ECoS will now search for the mini access point. Please be patient; this process can take up to 30 seconds.

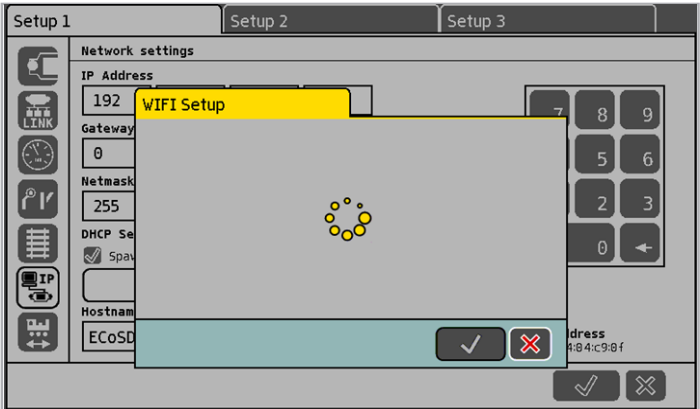


Fig. 9: Search Wi-Fi settings

You will first see the current settings for the network name and network password.

- i** If the settings are not displayed within one minute, exit the dialog by pressing the "x" button, unplug the power supply from the access point, reconnect the power adapter after 5 seconds, and start the configuration dialog again.

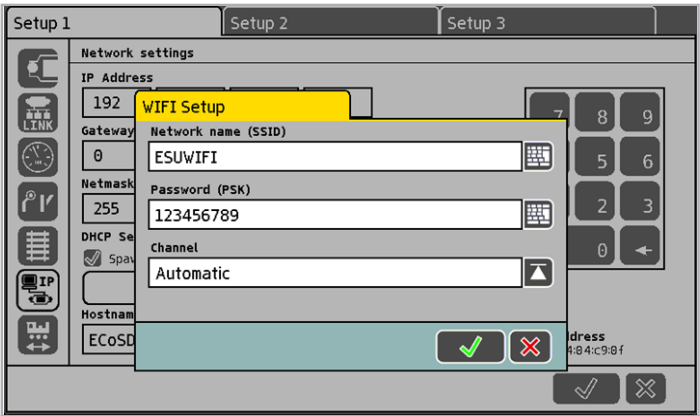


Fig. 10: Change Wi-Fi settings

- Enter the desired new network name.
- Enter the desired password.
- Confirm your entry with the green check mark.

- i** If the password is too long or too short, or contains invalid characters, the "OK" button will be grayed out. In this case, correct your entry.

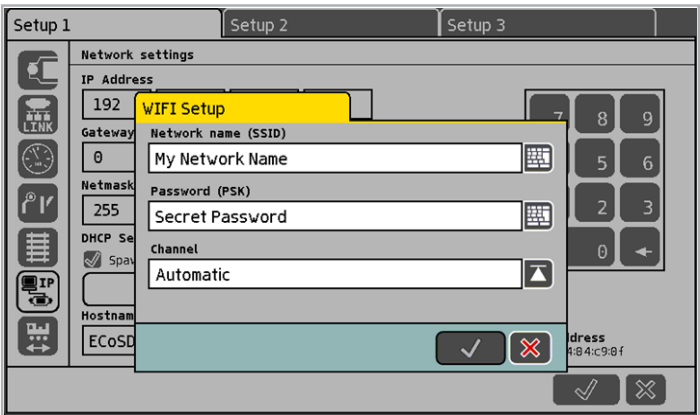


Fig. 11: New network name (SSID)

You will need the network name and password set this way later to connect to your Mobile Control Pro.

- i** The default network name "ESUWIFI" with the password "123456789" is already stored in every Mobile Control Pro at the factory. If the handheld controller finds this network, it will attempt to connect to it. In this case, the password request will not occur.

7.5. Operation with ESU ECoS - Home Network

With this connection type, you'd use the existing Wi-Fi network in your home to connect the Mobile Control Pro to your ECoS. You will need a Wi-Fi router (e.g., AVM® Fritzbox®) and a network cable to connect the ECoS directly to the Wi-Fi router.

In this scenario, the data travels from the Mobile Control Pro first via the wireless link to the Wi-Fi router, and from there via the network cable to the ECoS. IP addresses, Wi-Fi passwords, and network names are managed directly in the Wi-Fi router. The ECoS and Mobile Control Pro receive IP addresses automatically from the Wi-Fi router. Both the ECoS and the Mobile Control Pro are connected to the Internet.

We recommend this connection type if you are familiar with configuring a home network or if it is generally possible to connect the ECoS to the Wi-Fi router via cable. If ECoS and Mobile Control Pro are to be equipped with additional PC software control (e.g., WinDigiPet, RailWare, TrainController, RocRail, or other software), this connection is also useful.

Operation with ESU CabControl

7.5.1. Connecting to the Router

The ECoS must first be connected to one of the internet router's LAN ports using a network cable (a so-called RJ45 patch cable). Most routers have free network ports labeled "LAN". If the connection is successful, the "Link" LED on the ECoS's network port will light up.



Fig. 12: ECoS on AVM® FRITZ!Box®

7.5.2. ECoS Settings

Afterward, some settings must be made in the ECoS setup menu so that your Mobile Control Pro can connect smoothly.

i All screenshots show an ECoS 50220, but are also available on monochrome screens.

7.5.2.1. Setting the Hostname

You should first give your ECoS a network name. This name will later be displayed on the Mobile Control Pro display and serves as a distinguishing feature if multiple ECoS control units are in a network.

7.5.2.2. IP Settings

In this case, IP address management is handled by the Wi-Fi router. You must inform the ECoS of this by checking the "Obtain address settings via DHCP" box.

After a few seconds, the ECoS will display the data received from the Wi-Fi router for your information. Changing this name is neither possible nor necessary.

i Depending on your Wi-Fi router's settings, the IP settings displayed on your ECoS may vary. This is normal and is no cause for concern.

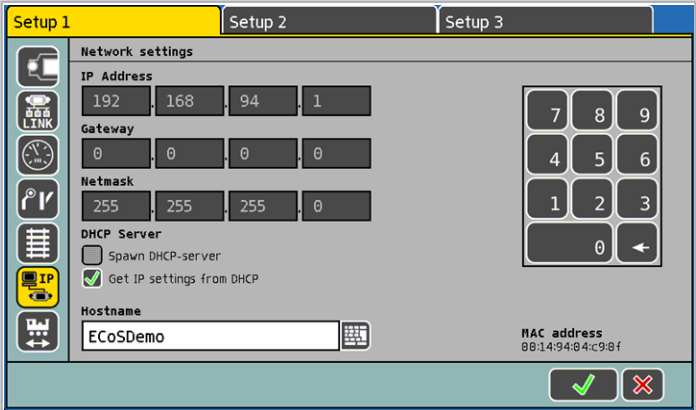


Fig. 13: Hostname and IP settings in the home network

7.6. Operation with ESU CabControl - Isolated Operation

A Wi-Fi transmitter module is built directly into the ESU CabControl Integrated Control Unit (the so-called "ICU"). By default, this transmits under the network name "ESUWIFI" with the factory password "123456789". The Mobile Control Pro will connect directly to this Wi-Fi network as long as the ICU is switched on. No further settings are required.



Fig. 14: Island operation with ESU CabControl ICU

Operation with Z21®

7.7. Operation with Roco® Z21® - Island Operation

No special precautions are required for operation with Roco® Z21®. Connect the command station and the TP-Link router as described in the manual.

i Make sure that you either have a "genuine" Z21 command station (black) or, alternatively, that the starter pack Z21 with the WLAN package (ROCO 10814) has been enabled for network operation.

Use the Mobile Control Pro to search for the network "Z21_XXXX," where the last four digits are the serial number of the TP-Link router used. If you want to change the password or the SSID (network name), proceed as described in the Roco document "Router Configuration".

i You can also access the router's configuration page directly using the Mobile Control Pro's Firefox browser.



Fig. 15: Island operation with Roco® Z21®

We'll explain how to establish the Wi-Fi connection later in Chapters 8 and following.

All locomotives and accessories can be controlled with the Mobile Control Pro app, but the Z21 does not manage a central locomotive database. You must therefore create the vehicles manually, as shown later.

7.8. Operation with Märklin® Central Station® 3 - Home Network

The Märklin® Central Station® 3 must first be connected to one of the internet router's LAN ports using a network cable (a so-called RJ45 patch cable). Routers usually have free network ports labeled "LAN." If the connection is successful, the "Link" LED on the central station's network port will light up. Observe the network settings in the Märklin® operating instructions.

After that, further settings must be made in the setup so that the Mobile Control Pro can automatically locate the central station: The CAN gateway must be started in "Broadcast" mode, and the destination address should ideally be 255.255.255.255. Fig. 17 shows the correct settings.

The Mobile Control Pro can adopt all locomotive and switch objects stored in the Central Station®.

The locomotive images and function key icons are also displayed as selected in the central station.

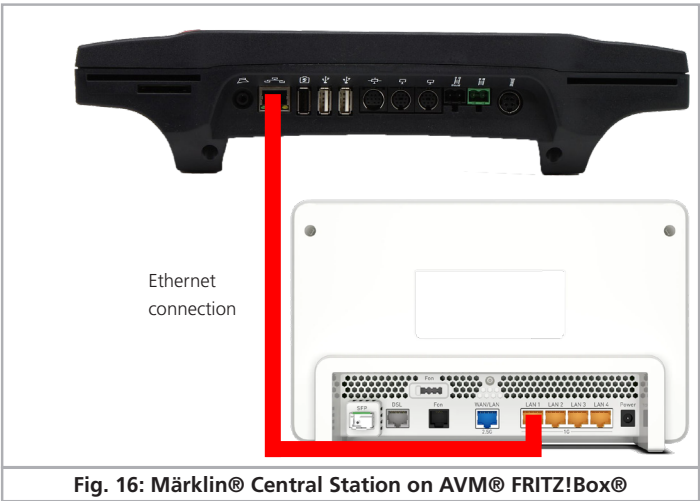


Fig. 16: Märklin® Central Station on AVM® FRITZ!Box®

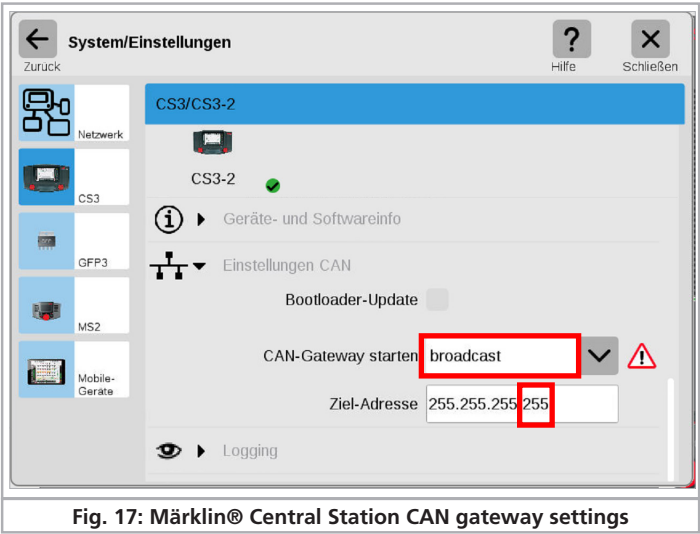


Fig. 17: Märklin® Central Station CAN gateway settings

Initial Operation

7.9. Operation with WiThrottle™ Command station - Isolated Operation

To connect the Mobile Control Pro to a command station with an integrated WiThrottle™ server, please refer to the operating instructions for the respective command station. Command stations such as the Intellibox® 2 Neo, Digitrax® LNWI, or WifiTrax® NCE Cab Bus Wi-Fi Interface typically already include a Wi-Fi module that creates a standalone network. Search for the appropriate network with the Mobile Control Pro handheld controller and connect to it. We'll explain how to do this later. Once the Wi-Fi connection is successfully established, the Mobile Control Pro app will automatically detect the corresponding devices.



Fig. 18: Some well-known WiThrottle™ compatible control units

The available functions depend on the implementation of the WiThrottle™ protocol: Some manage a central locomotive list, which can then be accessed and used directly by the handheld controller. For other command stations, all locomotives must be manually created and managed in Mobile Control Pro.

8. Initial Operation of Mobile Control Pro

Press and hold the power button until the ESU logo appears on the display. If this does not happen after a maximum of 4 seconds, release the power button and press and hold it again. If the handheld controller is connected to the charging port, you may need to press it twice.

When using the Mobile Control Pro, please keep the following in mind:

- If the ESU logo appears briefly but the screen then immediately goes dark, the battery level is probably too low for proper operation. In this case, briefly charge the battery (at least 10 minutes) and then try again.
- The display turns off after 10 minutes of inactivity to save power. Briefly press the power button to wake the device up.
- Even if the display is dark, the handheld controller is still running and requires power. After approximately one day in "standby", the battery will be depleted and the device will shut down automatically.
- At the end of the operating day, we recommend shutting down the Mobile Control Pro by pressing and holding the power button (with the display switched on) until the shutdown menu appears, then tap Power off and OK.

8.1. First Start - Important Basic Settings

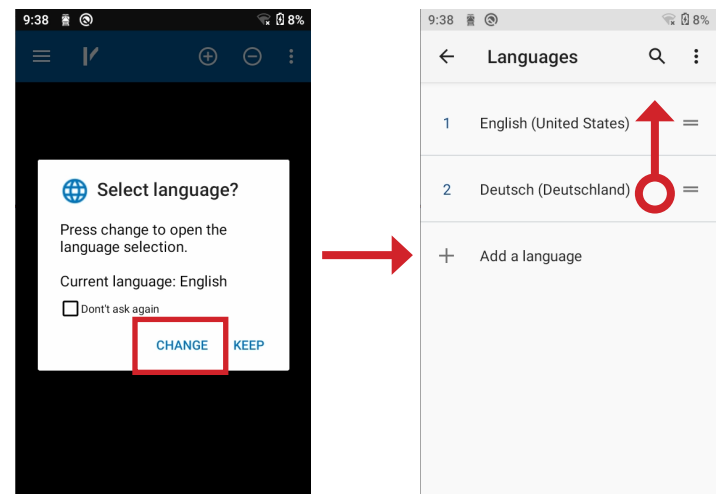
After the operating system starts, the Mobile Control Pro app will load automatically. This occurs with a time delay so that all system services are loaded and any existing Wi-Fi connection can be re-established.



If the handheld controller finds a Wi-Fi network called "ESUWIFI," it will automatically attempt to connect to it using the password "123456789." These are the factory settings for both the ESU Mini Access Point and the CabControl ICU. You can skip the manual Wi-Fi configuration in such cases.

8.1.1. Language Selection

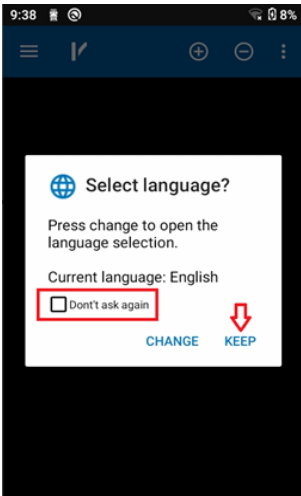
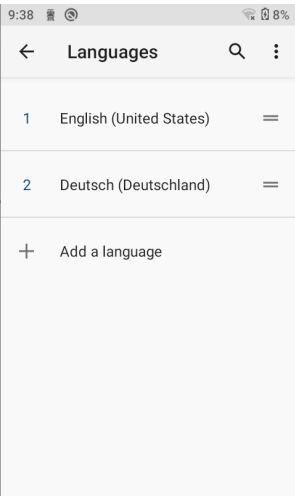
After launching the Mobile Control Pro app, the language selection menu is displayed. English is the factory default. Select "CHANGE".



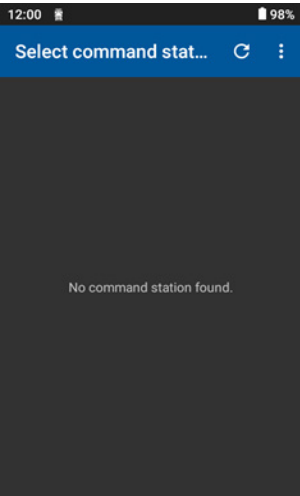
Basic Settings

Both German and English are preinstalled, with English being the first language and thus the display language. If you prefer to use the throttle in German, tap and hold the "German" line and drag it up until it is above "English". Then release the line. The display language will immediately change to German.

The language selection menu is displayed again each time the program is started. If you do not want to see it again, activate the "Do not ask again" option and press "Keep".

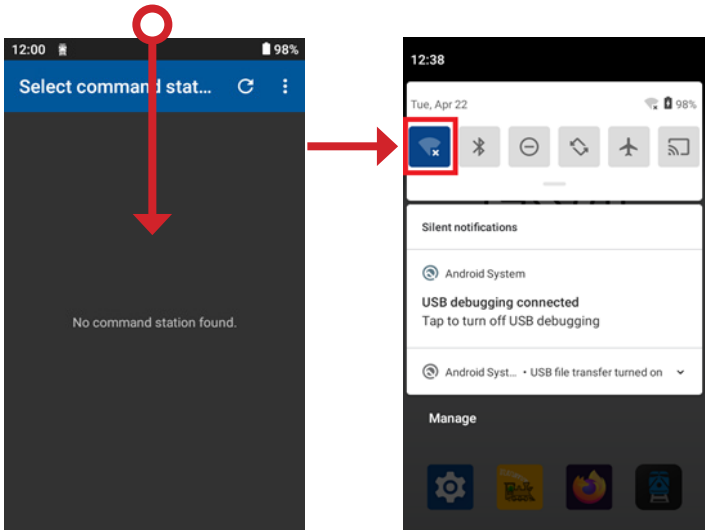


To return to the Mobile Control app, press the "Back" button. What is displayed there depends on whether a Wi-Fi connection is already established and a control unit has been selected. In most cases, the "No command station found" screen will be displayed. Therefore, a Wi-Fi connection must now be established.

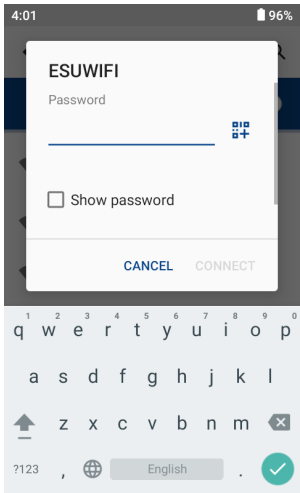
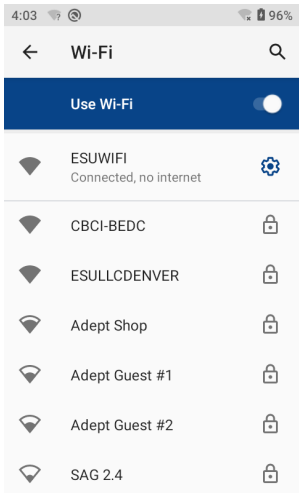


8.1.2. Connecting to Wi-Fi

- Swipe down from the top of the screen to open the Android context menu. Select Wi-Fi settings by pressing the blue icon until the menu opens.



- Select the desired Wi-Fi network from the list of available networks by tapping its name.
- Enter the Wi-Fi password. You can display the letters of the password if desired. Select the "Show password" option to do so. This prevents incorrect entries.
- Press "Connect." If the password was entered correctly, the connection will be established shortly.



General Android Features

The signal quality is displayed at all times in the status bar at the top right. The more bars, the stronger and more stable the connection.



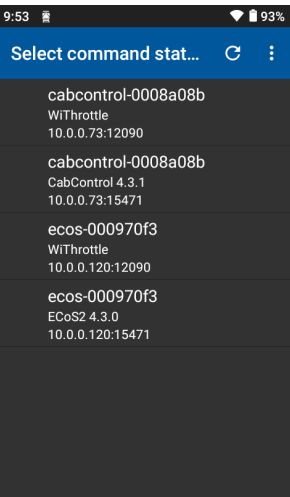
If a Wi-Fi connection is available but no internet connection (e.g., in isolated mode), this is indicated by a small "x" in the connection symbol.



8.1.3. Selecting the Digital Command Station

After the handheld controller has been successfully connected to the Wi-Fi, the desired digital command station must be selected. To do this, the Mobile Control Pro app searches the local network for suitable command stations.

Select the desired one from the list of available command stations. For your convenience, the software version, IP address, and host name of the command station are displayed. The command station protocol also provides assistance in selecting the right command station.



If a command station supports multiple protocols (such as the ECoS, which supports both the ECoS2 protocol and WiThrottle™), the command station will appear multiple times in the list. You can then decide which protocol the handheld controller should connect to. The ECoS2 protocol is recommended for ESU command stations, as it offers the maximum range of functions.

 The app remembers which control unit you selected. The next time you power it on, it will first attempt to reestablish the connection. If this fails, the list of available command stations will be displayed.

You can restart the search at any time: Since some command stations respond with a delay, yours may not be found immediately.

8.1.3.1. Demo Mode

If there is no command station in the network, you can select a demo mode using the "three-dot menu." This allows you to test the device.

9. General Android Features

Although Android is very intuitive and the Mobile Control can be operated essentially like your mobile phone, we feel some basic information is useful at this point.

9.1. Main Screen

To access the main screen, press the "Home" touch button – anywhere – as shown in Fig. 2. The following icons are particularly important on the home screen:

- a) Icon for launching the actual Mobile Control Pro app
- b) Icon for opening the Android setup menu
- c) Battery charge level in %
- d) Task: All running apps are listed. This icon can be used to return to the ESU Mobile Control Pro app if it is running in the background and you accidentally press Home.
- e) Home: You can return to the main screen at any time.
- f) Back: The Back button takes you back one step in each menu.

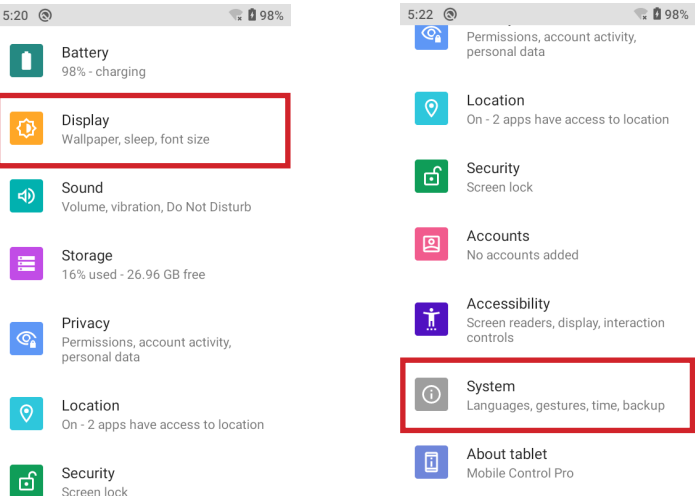


Fig. 19: Mobile Control Pro main screen

Android Setup

9.2. Setup

The setup menu contains several settings that you should configure appropriately right from the start:



9.2.1. Language

You can change the language in the system settings. The Mobile Control Pro app, developed by ESU, currently supports German and English.

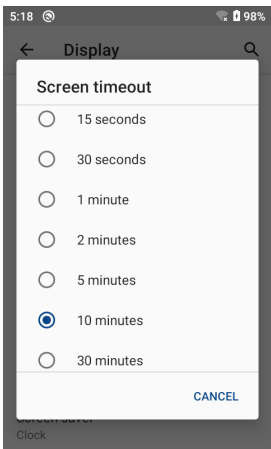
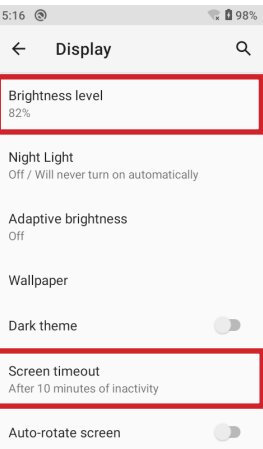
9.2.2. Display

Two settings within the display settings are important:

9.2.2.1. Brightness

Here you can adjust the display brightness. Choose the darkest setting possible to positively influence battery life.

 The brighter the display, the warmer the device becomes. This is completely normal and no cause for concern.

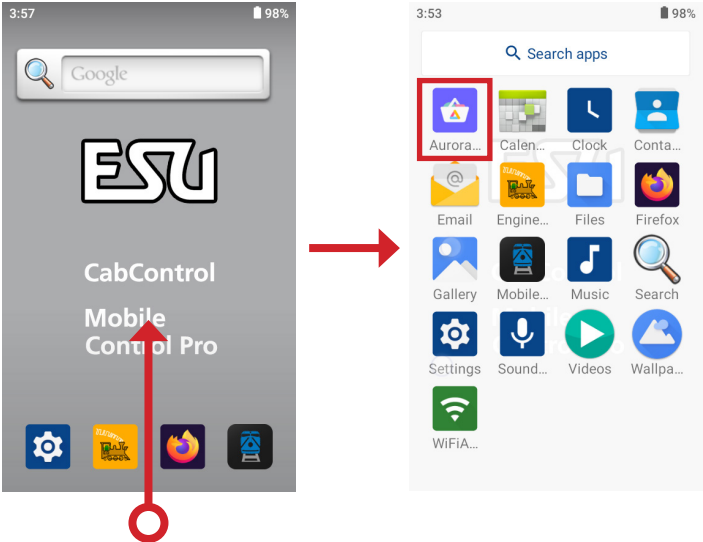


9.2.2.2. Automatically turn off the display

In the Advanced Settings, you can set the number of minutes of inactivity after which the Mobile Controls Pro's screen should turn off. The higher the value, the more power it will consume.

9.3. Programs

Here you can view all installed programs. To view the list of installed apps, swipe up from the bottom edge of the screen until the list appears.



9.3.1. Aurora Store

Using the Aurora Store, you can download new apps and install them on your device. The Aurora Store gets its apps from Google, and a Google account is not required. Follow the instructions to set up the Aurora Store.

All apps and programs should install easily on the Mobile Control Pro. However, we cannot guarantee the functionality of non-ESU apps. Using the Store requires an internet connection.

You may need to temporarily connect your handheld controller to your home network.

Mobile Control Pro App Main Screen

10. The App Main Screen

After launching the Mobile Control Pro app and successfully connecting to a control center, the main screen will appear. All main functions are controlled from here.

The functions shown here generally apply to operation with all control centers. However, depending on the control center used, menu options may be missing or have different names.

- a) Switching between locomotive control and accessory control
- b) "+" Adds locomotives or accessories to the quick access list
- c) "-" Removes locomotives or accessories from the quick access list
- d) Calling up the main menu "Hamburger menu"
- e) Calling up the context menu "Three-dot menu"

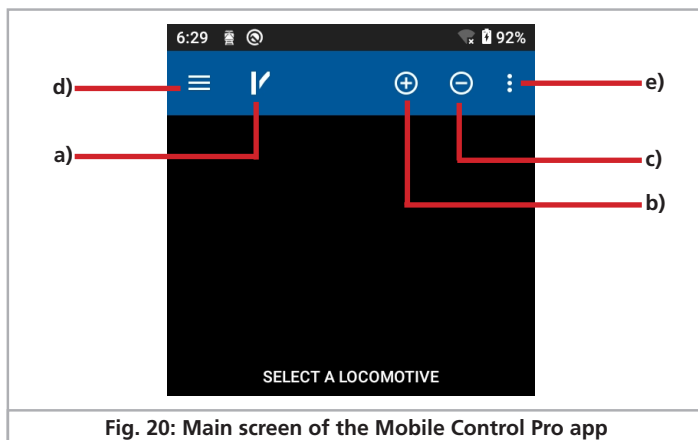
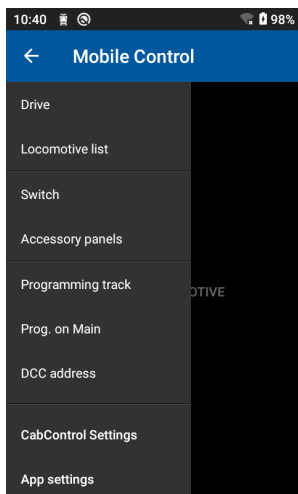


Fig. 20: Main screen of the Mobile Control Pro app

10.1. Main Menu



The main menu appears as soon as you touch the corresponding button. In the main menu, you can also switch between the basic functions "Drive" or "Switch." You can also call up two more lists:

- In the "Locomotive list," you can display all locomotives that exist in the ECoS, CabControl, or other connected command station.
- In the "Accessory panels," you can display and select all available Accessories.
- With "Programming track," you can access the programming track, if available.
- With "Prog. on Main," you can access main track programming, if available.
- With "DCC address," you can read or change the address of a locomotive on the programming track.
- Depending on the command station used, "ECoS2 Settings," "CabControl Settings," "Z21 Settings," or "WiThrottle Settings" are displayed.
- "App settings" provides access to the app's configuration menu. For more information, see Section 13.

You can hide the main menu at any time by pressing the "Back" touch button in the bottom right corner.

10.2. Restoring the App "Task Manager"

If you accidentally sent the ESU app to the background, you can call up a list of all apps at any time by pressing the "Task" button and bring the ESU app back to the foreground.

11. Controlling Locomotives and Trains

The most important function of the Mobile Control Pro is operating locomotives and trains.

Basically, the desired locomotive must be called up on the controller. All called locomotives are recorded in an internal database ("quick access list") so that you can quickly switch between multiple locomotives.

Many modern command stations, such as the ESU ECoS, ESU CabControl, and also Märklin® Central Station®, also manage databases of all locomotive internally. In these cases, you can access them very easily with the Mobile Control Pro. All settings (locomotive image, name, function symbols) are then directly adopted by the command station.

Unfortunately, other command stations, such as the ROCO® Z21®, do not offer this option. Here, all locomotives must first be newly created in the Mobile Control Pro handheld controller and are managed locally in the handheld controller. The Z21 protocol does not offer any database management options.

Some command stations with WiThrottle™ servers (such as Intellibox® Neo) also do not manage a database, while others, such as JMRI, do offer databases (aka "locomotive rosters"). This depends on the implementation.

i If your command station does not manage a database, you must first create locomotives, as shown in Section 11.4. Otherwise, you can directly select the desired locomotives, as shown in Section 11.1.

Operating Locomotives

11.1. Selecting a locomotive

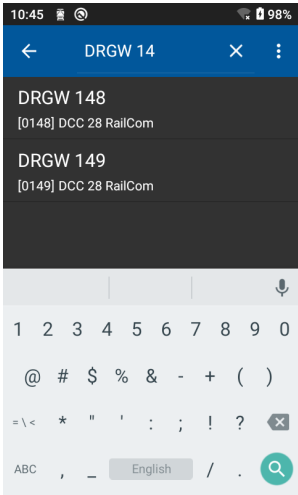
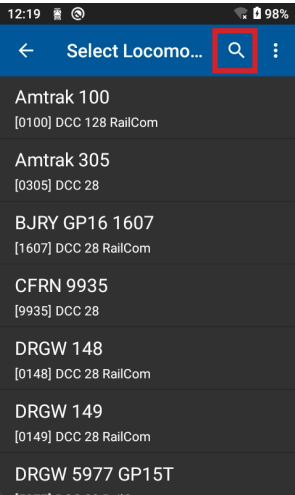
First, the first locomotive to be controlled must be called up from the command station database.

- Press the "+" symbol to access the list of all locomotives.
- Select the desired locomotive by tapping.

11.1.1. Searching for Locomotives

If there are many locomotives in the list, you can speed up the selection of the desired locomotive. To do so, press the magnifying glass icon to open the search.

- In the search field, type in part of the name or (if known) the address of the desired locomotive.
- The "hits" are displayed while you type.



11.2. Operating Locomotives

Once a locomotive has been selected, you have access to it. The following icons are displayed on the screen:

- List of previously accessed locomotives ("Quick Access List") with the locomotive's plain-text name
- Status of the current locomotive's functions. The current status (On or Off) is displayed for each button
- Locomotive icon
- "Forward" direction indicator
- "Reverse" direction indicator
- Locomotive address (where available)
- Data format and speed steps: The maximum number of speed steps for the locomotive (depending on the data format and protocol)
- Automatic login with RailComPlus
- Current speed step of the locomotive
- Speedometer display
- Display of the actual, read-out speed of the locomotive (only possible with LokSound 5 decoders in conjunction with ESU command stations)

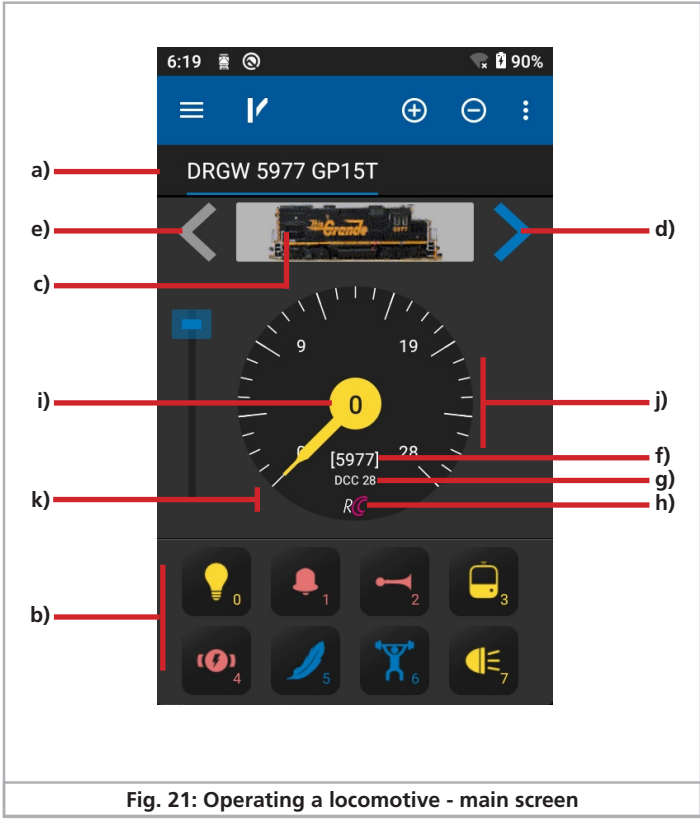


Fig. 21: Operating a locomotive - main screen

Operating Locomotives

11.2.1. Speed & Direction

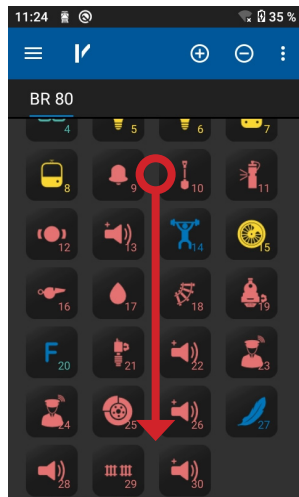
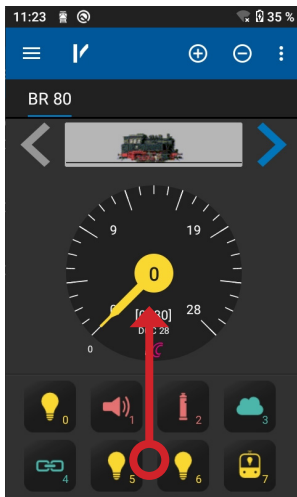
- Turn the control knob clockwise and the locomotive will start moving. The speedometer needle will immediately move and display the current requested speed; the speed step will also be displayed for precise control.
- Turn the control knob counterclockwise past zero until you hear a "click" to reverse the direction of travel. The control knob is motor-assisted. If you turn the control knob past zero and reverse, simply release it. It will then automatically return to the zero position. The current direction of travel is indicated by the blue arrow. Forward is to the right and reverse is to the left regardless of how the locomotive physically appears on the track from your perspective.
- To reverse the direction of travel, you can also tap the corresponding arrow directly.

11.2.2. Functions

Each function key has a symbol that describes its function in more detail. In addition, a number in the lower right corner indicates the sequence number of the function; starting with 0 in the upper left corner for the light button F0. The icons of the individual function groups (essentially physical functions, logical functions, and sound functions) have different colors to better distinguish them.

- Press the icon to turn the function on or off.
- Depending on whether it is a permanent or momentary function, the function may only remain active as long as you touch the icon with your finger.

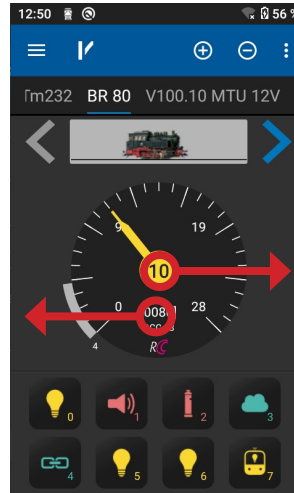
If a locomotive has more functions than there is room on the screen, you can scroll through the list of functions by swiping from the bottom up (swipe directly in the block with the function icons) so that you have an overview of all possible function keys.



11.2.3. Changing Locomotives

If you want to control another (additional) locomotive, first press the "+" button to access the locomotive selection list. Select another locomotive as described in section 11.1. All locomotives will now be displayed in the quick access list. If you want to call up and operate the next locomotive, simply swipe left or right in the speedometer display area.

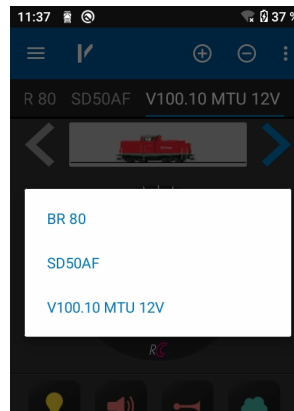
The current locomotive (in the example, the BR 80) will be displayed in the quick access list, highlighted and underlined. When changing locomotives, the rotary control will automatically move to the position appropriate for the current speed of the locomotive.



11.2.3.1. Quick Selection

Using the method shown, you can simply swipe left or right to select the next locomotive in the quick access list. You can also directly select the desired locomotive.

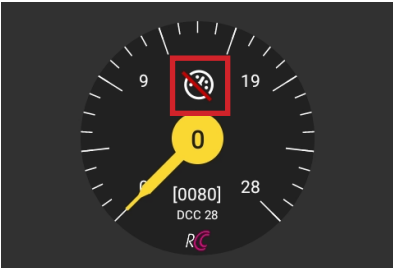
- Tap and hold the name of the current locomotive in the quick access list until the quick selection menu appears.
- Select the desired locomotive directly.



Creating a New Locomotive Manually

11.3. Blocked Locomotive

When you call up a locomotive, you may be able to view it but not control it. In this case, the "Blocked Locomotive" symbol appears. This means that the locomotive is currently being controlled by another controller.



You can take control of this locomotive as soon as you either press a function key or change the speed. The Mobile Control Pro only attempts to take control of the locomotive from the command station the first time it accesses the locomotive. If this is possible, the "Blocked Locomotive" icon disappears.

11.3.1. Allowing Locomotive Takeover on the ECoS

In the ECoS system, it is only possible to take over ("steal") locomotives that are called and controlled on one handheld controller with another handheld controller after configuration. This is useful if you primarily control your layout alone but have multiple handheld controllers. If you want to enable taking over locomotives, check the "Allow another controller to take over locomotives" box in the setup.

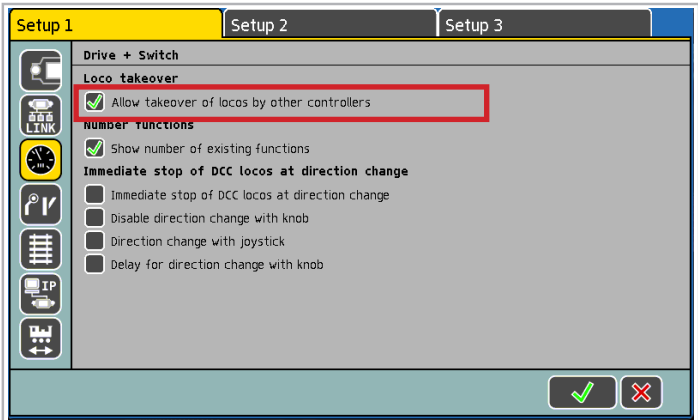


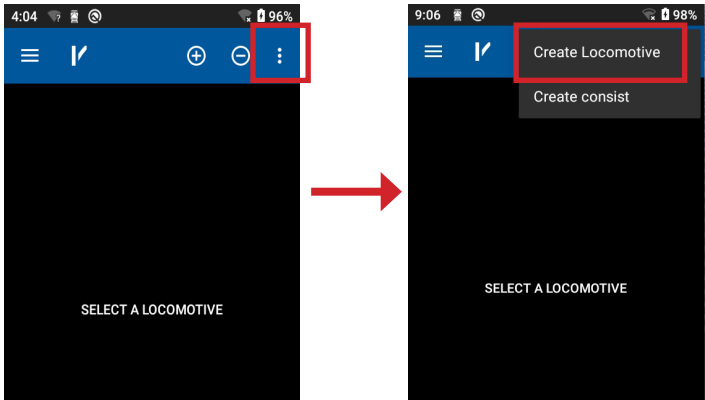
Fig. 22: Allowing other controllers to take over locomotives

11.4. Creating a New Locomotive Manually

If your command station cannot manage a global locomotive database, you must first create all your locomotives directly on the Mobile Control Pro. Manually creating locomotives is also possible with ESU command stations or WiThrottle™ command stations, but not with a Märklin® Central Station®. In this case, the locomotives must first be created directly on the command station.

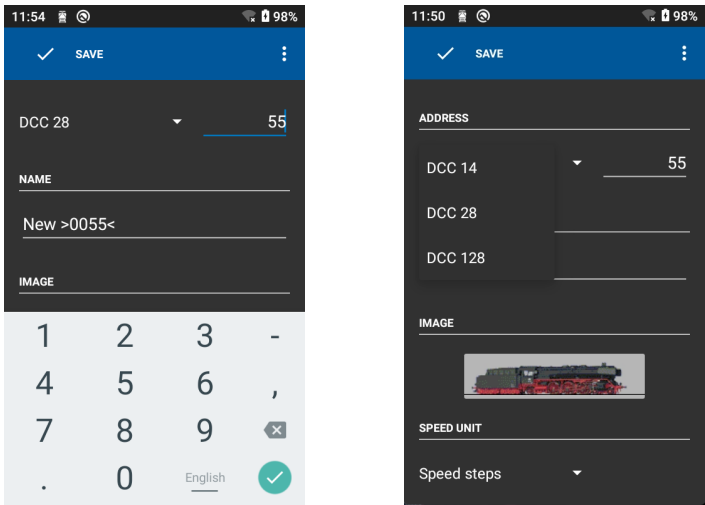
M4 locomotives or locomotives with RailComPlus cannot generally be registered manually, but only automatically.

- On the main screen, activate the "three-dot menu" and select "New Locomotive".



11.4.1. Locomotive Address

The current address of the locomotive must be entered here. Depending on the data format, the accepted address range may be limited. This address is used to actually control the locomotive on the track. Please note that no locomotive address should be assigned twice.



Creating a New Locomotive Manually

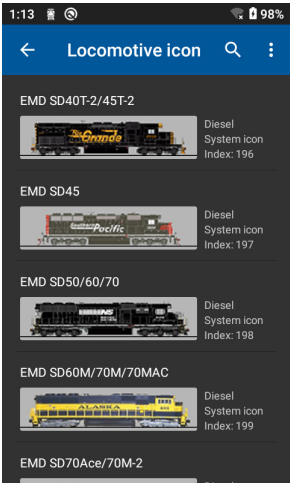
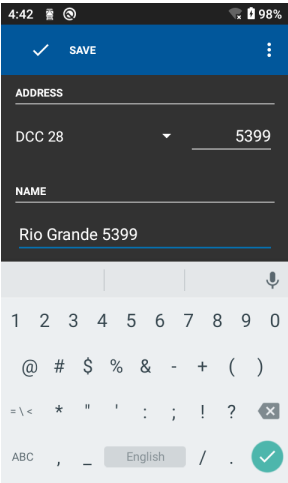
11.4.2. Data Format

Use this drop-down list to specify the data format for this specific locomotive. It does not check whether the locomotive understands the protocol. If in doubt, refer to the decoder manual or the command station manual (for the ESU ECoS, for example, see Chapter 11.2.3.1). Only use formats that your command station supports; otherwise, the locomotive will not work.

11.4.3. Locomotive Name

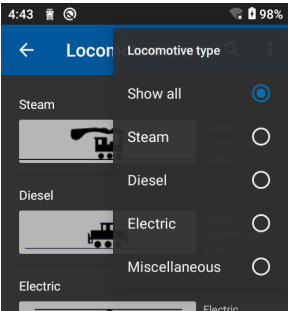
Select a descriptive locomotive name. This will help you easily find the locomotive.

 To hide the displayed keyboard, press the "Back" button in the bottom right corner of the touch panel.



11.4.4. Symbol

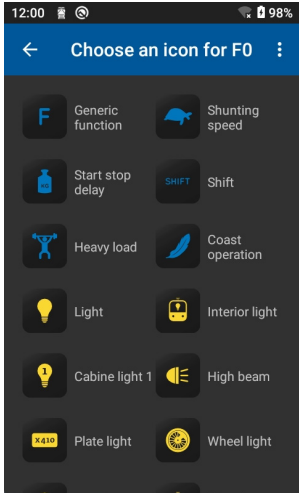
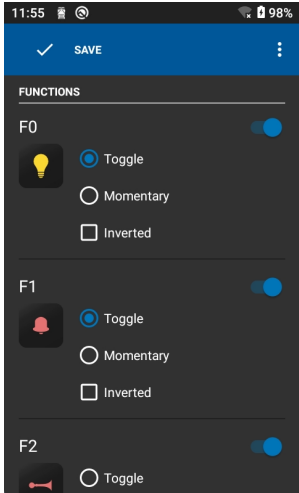
Tapping the (current) locomotive image opens a selection list with the available locomotive images. The Mobile Control Pro displays all symbols on the command station and within the app. The symbol is only used to quickly visually distinguish your locomotives. If you are using an ECoS, you can choose between internal images (i.e., factory-installed images in the ECoS) and user-defined images. In the "three-dot menu" in the top right, you can specify whether you want to display only internal images or also user-defined images, or only steam, diesel, or electric locomotive images.



 Based on the locomotive symbol, the command station recognizes whether it is a steam, diesel, or electric locomotive. This distinction is very useful for later searches.

11.4.5. Function Key Symbols

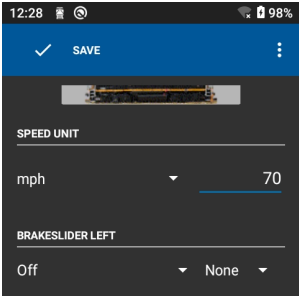
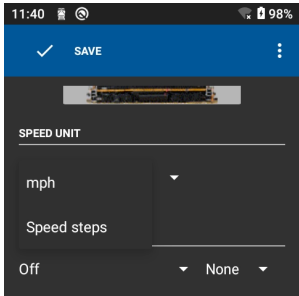
You can assign a symbol to each function. For each locomotive and each key, you can not only assign a symbol, but also specify whether it is a permanent or momentary function.



- Select the desired symbol for each function from the list. For your convenience, its meaning is shown next to each symbol.
- Select whether the function should be a temporary or permanent function. Momentary functions remain active only for the duration of the touch. Permanent functions remain active when the screen is touched until the screen is touched again.
- If you do not want to use the function keys, simply turn them off using the switch in the top right.

11.4.6. Speed Unit

As an alternative to displaying speed steps, you can switch to a km/h (or mph) display. To do so, select "km/h" from the list of speed units and enter the locomotive's maximum speed. The speedometer will now display km/h and scale the dial accordingly.



Creating a New Locomotive Manually

11.5. Editing a Locomotive

If desired, you can edit the properties of a locomotive directly on the Mobile Control Pro. If the command station manages a database, all changes are transferred directly to the command station or all other connected Mobile Control Pro handheld controllers.

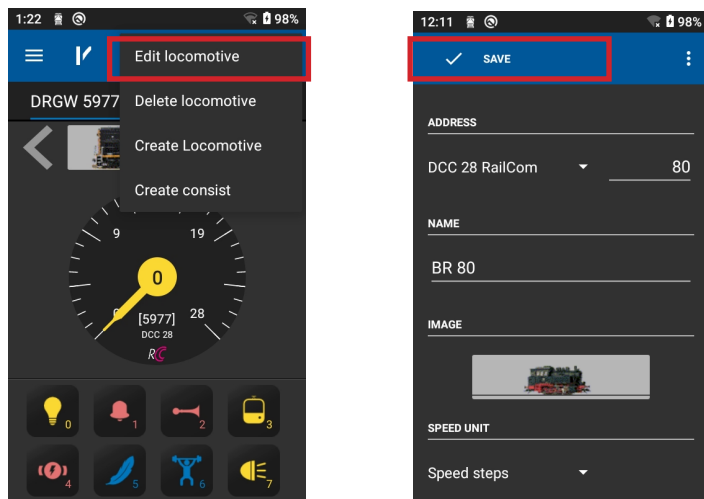
i Editing locomotives is currently not possible when operating with a Märklin® Central Station; please make all changes directly on the command station.

First, press the menu button in the bottom left and select "Edit Locomotive" from the menu.

i If the locomotive is blocked, this function is not available.

After selecting this function, the "Edit Locomotive" screen opens. Here, you can change all settings exactly as shown when creating new locomotives in section 11.4.

Once you have confirmed all changes, press the "Save" button. If you do not want to save any changes, please press the back button and select "Discard Changes".



11.5.1. Address

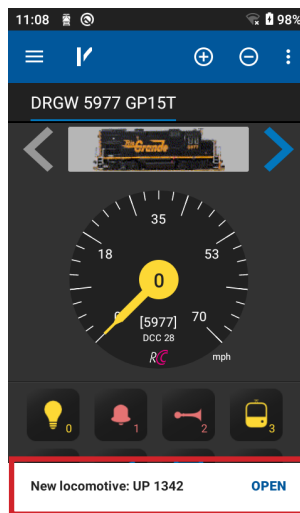
The locomotive's address must be entered here. Depending on the data format, the accepted address range may be limited. This address is used to actually control the locomotive on the track.

i If the locomotive was automatically registered with RailComPlus and you change the locomotive address here, the newly selected address will also be written (programmed) to the decoder after confirmation. In all other cases, the address is not written directly to the decoder, but must be reprogrammed manually. (For ESU command stations only).

11.6. Registering RailComPlus or M4 locomotives

Locomotives equipped with an M4- or RailComPlus-capable decoder register automatically with your ESU command station. As soon as you place a new locomotive on the track, it is automatically recognized and immediately offered for selection on the main screen of your Mobile Control Pro.

If you would like to immediately operate the newly detected locomotive on the handheld controller, simply tap "Open." This message will disappear automatically after a short time.



11.7. Braking Functions (only for ESU ECoS and ESU CabControl)

In conjunction with an ESU command station, you can now use the three braking functions of all LokSound 5 decoders particularly conveniently and continuously (analog):

Brake functions 1 to 3 are usually assigned to different (digital) function keys by the sound engineer when creating a sound project. When active, the braking time is reduced and the locomotive decelerates - if desired - to zero using the then-valid braking time. The braking times can be set via CV.

With the Mobile Control Pro, the three braking controllers can now be individually controlled continuously: The harder you brake, the faster the locomotive will decelerate to zero. The assignment of the three braking functions to the controllers must be done manually.

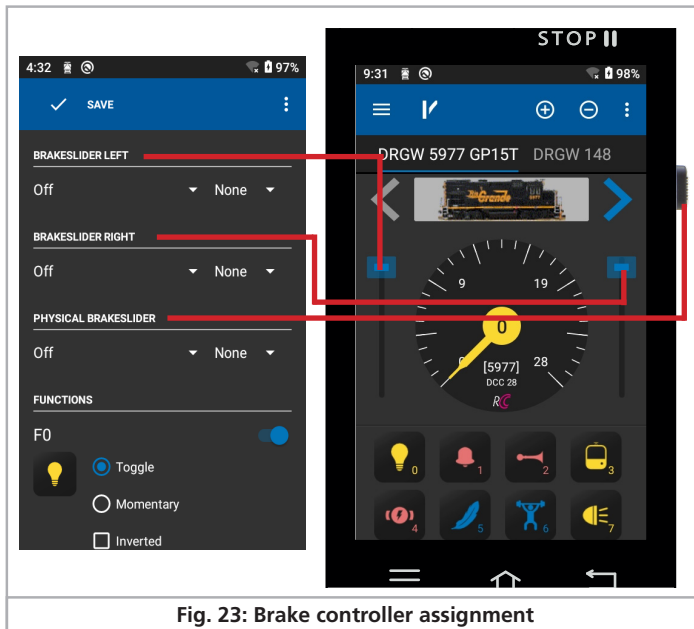
i You may need to research the correct assignment in the decoder leaflet or the locomotive documentation. Every ESU sound project usually includes at least one brake button that uses brake function 1.

First, call up the locomotive and select the "Edit Locomotive" function. Scroll until you see the entries for the brake controls. Initially, all three brake controls are "Off." One brake control can be displayed to the left and right of the speedometer. Additionally, there is a hardware brake control on the right side of the device (see Fig. 23).

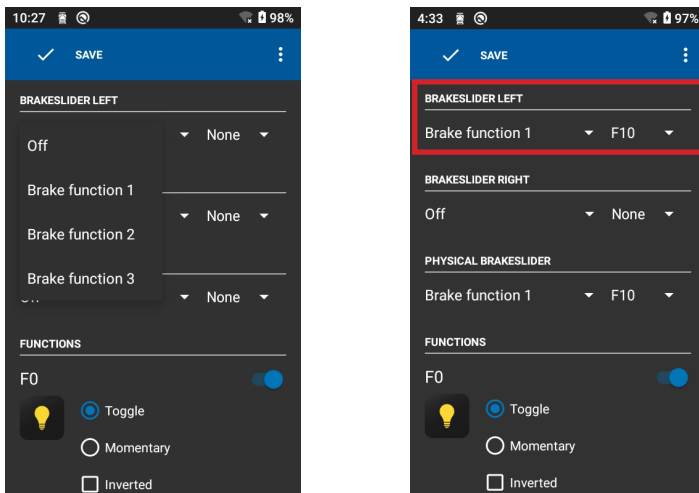
The respective brake function is normally active when the brake control is moved down. The bar then turns blue for control.

As soon as the brake is applied (even just a little), the locomotive should begin to decelerate. The further the control is moved down, the stronger the braking effect will be. To start moving, the brake must be completely released (control moved up).

Consists



Example: The ESU BR80 has a brake button (F20) that is connected to brake function 1. This should be activated with the left brake controller. To do this, select brake function 1 and also press the F20 key. As soon as the brake controller is activated, the F20 key is also activated so that the sound of the brake being applied can also be heard.

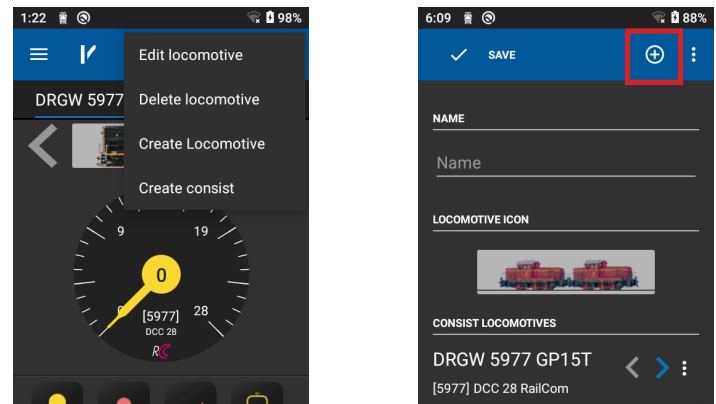


12. Consists

The Mobile Control Pro can also control "consists", provided the command station allows it. Consists are managed either in the ESU command station or directly in the Mobile Control Pro (for WiThrottle™ or Z21™ command stations).

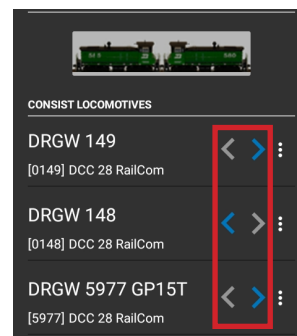
12.1. Creating a Consist

- Select the locomotive that should be added to the consist first.
- Select "Create Consist" from the three-dot menu.
- Give your consist a descriptive name.



At the bottom of the screen, you will see the "LOCOMOTIVES IN CONSIST" list. The first locomotive that will be part of the consist is already displayed there.

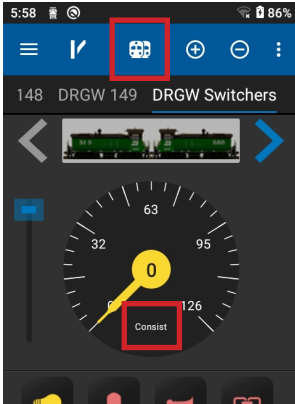
- Press the "+" button and select the next locomotive that should be part of the consist.
- Repeat this process until all desired locomotives have been added.
- Select the locomotive's direction of travel within the consist by selecting the small direction arrows with the right arrow for a locomotive facing "forward" in the consist and the left arrow for a locomotive facing "reverse" in the consist.
- Established consists cannot be built into other consists and locomotives already part of one consist cannot be built into a second consist



Consists

12.2. Operating a Consist

A consist appears like a single locomotive in the list of available locomotives and can be called up and driven in the same way. To indicate that it is a consist, "Consist" is displayed in the speedometer. The consist symbol is also displayed in the menu bar.



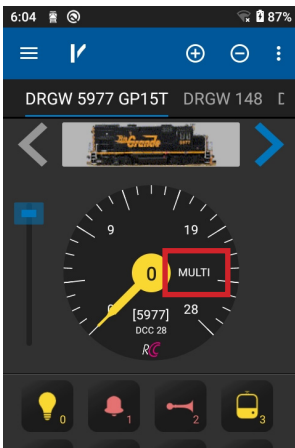
A train command is sent to all members of the consist; all locomotives therefore always travel at the same speed, but in the direction selected when the consist was created. This also allows for trains with locomotives running "back-to-back."

If you press a function key for a consist, this command is also sent to all members of the consist.

12.2.1. Operating a Locomotive Individually in a Consist

You can still call up each locomotive that is part of a consist on the screen. "MULTI" is displayed to indicate that the locomotive is a member of a consist.

If you change the speed of the locomotive, all locomotives in the consist will change their speed. If you trigger a function, only the individual locomotive will receive the command. This way, you can control individual functions (e.g., lighting) of a locomotive even if it is part of a consist.

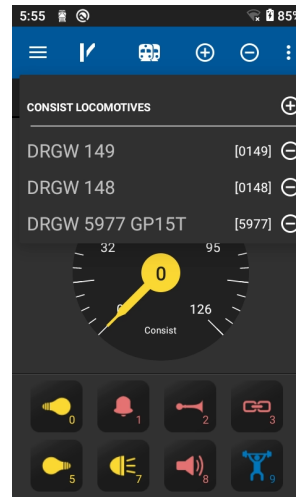


12.2.2. Consist Quick Management

The quick management is useful for quickly removing locomotives from a consist or checking which locomotives are part of the consist. Press the consist icon in the menu bar to open the quick management. This opens a list of all members of the consist.

Pressing "-" removes a locomotive from the consist. Pressing "+" allows you to add a locomotive to the consist. Selecting the locomotive name itself calls up the locomotive on the throttle.

You can remove locomotives from a consist, but at least one locomotive must remain. If you want to permanently delete the consist, select "Delete Locomotive" from the three-dot menu.



13. Accessories & Routes

The Mobile Control Pro can also control accessories and routes. Operation is based on the accessory panel of an ESU ECoS or Central Station®.

In each Mobile Control Pro controller, you can create any number of accessories independent of the command station and arrange accessories or route symbols there. The accessory panel always visually displays the current status of all accessories.

13.1. Accessory Panel Mode

- First, select accessory panel mode to switch accessories.

Initially, only a blank screen will be displayed. You must first create at least one accessory panel to link accessory devices to it such as switch machines and/or signals.

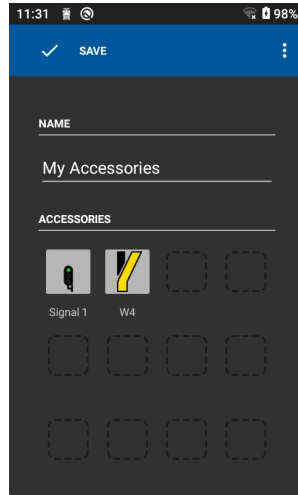
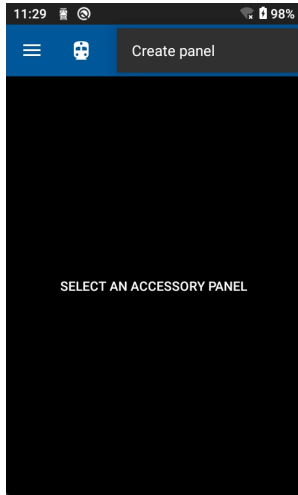


A maximum of 16 accessories can be placed in each accessory panel. You may therefore need to create multiple accessory panels if you want to control more accessories.

Accessories & Routes

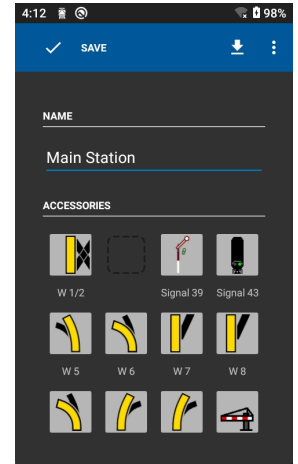
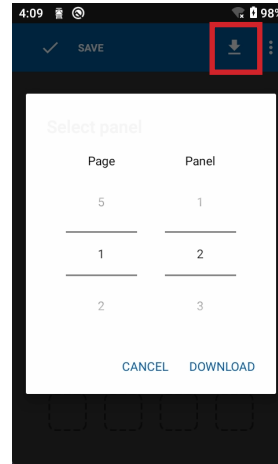
13.2. New Accessory Panel

- Select "Create Panel" from the context menu.
- Give the panel a new name.



- Select the "Download" button
- Select page "1" and accessory number "2"
- Press "Download"

After a few moments, the "Main Station" accessory of the Mobile Control Pro will look exactly as it does in ECoS.



13.2.1. Accessory Download from ECoS

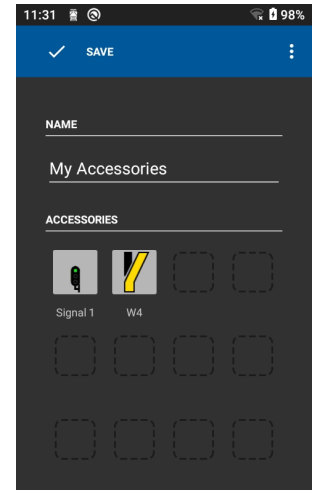
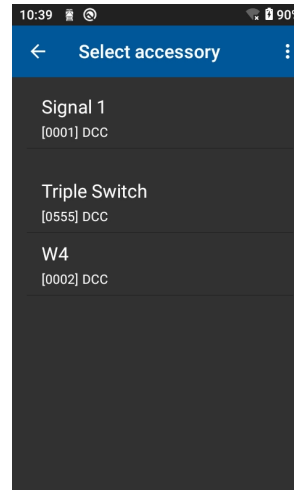
If desired, you can copy an accessory directly from ECoS to the Mobile Control Pro handheld controller. This is useful if you want to have exactly the same accessory arrangement. Let's assume you want to transfer the following accessory: Page 1, Accessory Number 2 (note the yellow tabs).



13.2.2. Placing Accessories

You can place accessories anywhere on the accessory panel.

- Tap the position where the new accessory should be placed.
- A list of all accessories created in the command station opens.
- Select the desired accessory.
- Once you have finished configuring the accessory page, press the "Save" button to return to the main screen.

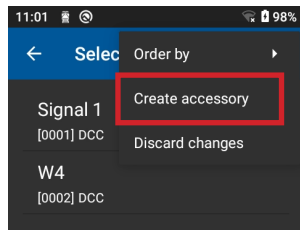
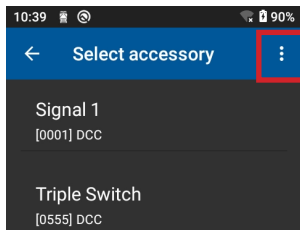


Accessories & Routes

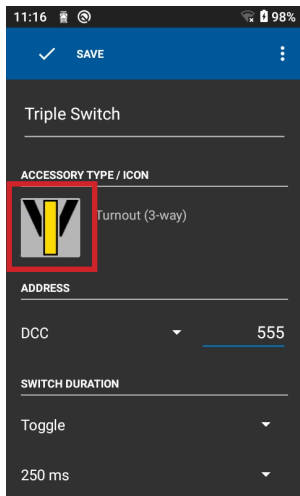
13.3. New Accessory

Of course, you can also create new accessories directly if your control center (e.g., Z21®) does not offer central database management.

- First, tap the position on the accessory page where the new switching device should be placed (as described in section 13.2).
- Select the "three-dot menu" in the "Select accessory" dropdown list and select "Create accessory".



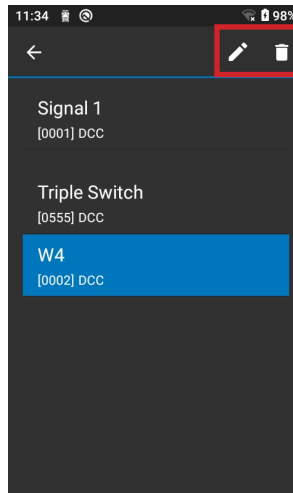
- Give the new accessory a suitable name.
- Tap the icon to access the accessory type selection. Select the appropriate type.
- Enter the address of the accessory. Refer to your decoder manual.
- Select the data format and, if necessary, the switching duration.
- Choose between "Toggle" or "Pulse mode".



13.4. Editing or Deleting Accessories

Of course, accessories can also be edited or deleted.

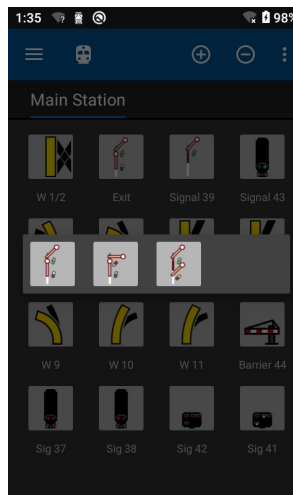
- Select the "three-dot menu" and then select "Edit Panel" and then tap the accessory you want to edit.
- Find the accessory in the selection list, select and hold on the accessory until the context menu appears at the top.
- Select either "Edit" with the pencil icon or "Delete" with the trash icon.



13.5. Operating Accessories

After successfully configuring the accessory panel, all accessory devices can be operated directly by tapping the corresponding icon.

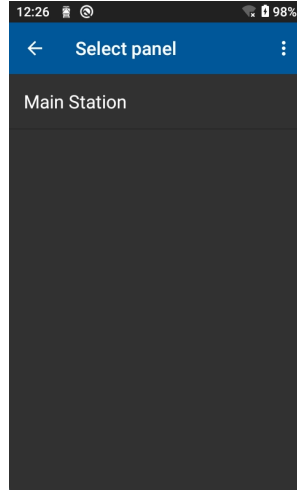
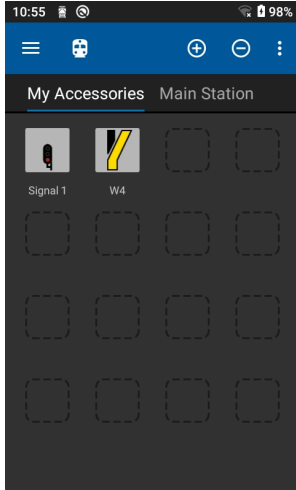
- For two-position accessories, the state of the accessory is changed directly.
- For three- or four-position accessories: A small window opens with all possible switching states. Select the desired switching state. The window closes and the state is switched.



13.6. Selecting an Accessory

Similar to locomotives, you can easily switch between different accessories:

- Swipe left or right in the accessory area to select the adjacent accessory.
- Press the "+" button to add a new accessory to the quick access list.



14. Operation with WiThrottle™ or Z21®

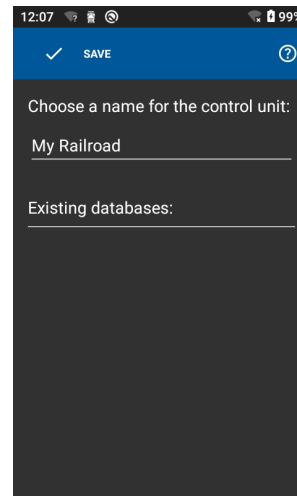
In this section, we cover special features of operation with WiThrottle™ or Z21® command stations.

14.1. Databases

Since these command stations do not manage global locomotive and accessory databases, they must be created locally in Mobile Control Pro. Up to eight databases can be managed on the handheld controller. When connecting to a Z21 for the first time, an attempt is made to automatically create a database with the name of the Z21 and its serial number.

Each time Mobile Control Pro reconnects to this command station, it searches for the database and automatically reconnects it.

When connecting to a WiThrottle™ command station for the first time, the app suggests a database name that can be changed as desired.



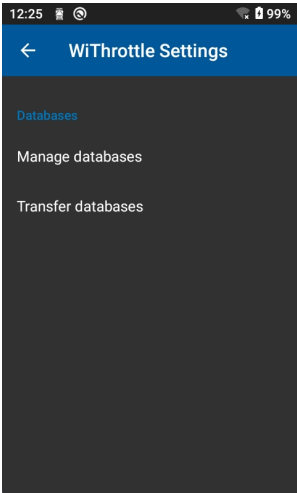
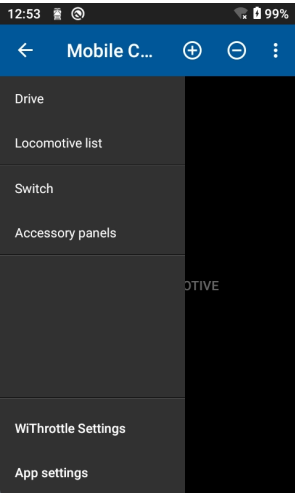
You do not necessarily have to create a new database. "Existing Databases" is listed at the bottom of the screen. You can tap one of these databases to tell the app that you want to use the existing database. This is useful if you change your command station or want to access your exact database and locomotive lists in the club.

14.2. Managing Databases

You can overwrite the currently used database with the contents of another saved database. This may be useful if you are returning to your home layout after a club visit.

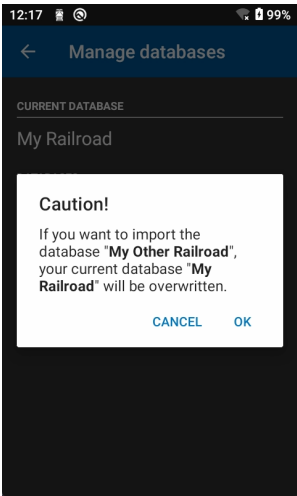
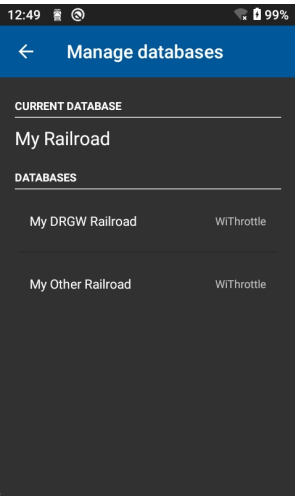
To do this, first select "Z21 Settings" from the main menu (for WiThrottle™ servers, "WiThrottle Settings" will of course be displayed) and then select "Manage Databases".

Managing Databases



The current database name is displayed at the top, and the available databases, also stored locally, are displayed in a list below.

If you now want to import the contents of one of the saved databases into the current database, simply select one of the databases. A warning window will ask if you really want to do this.



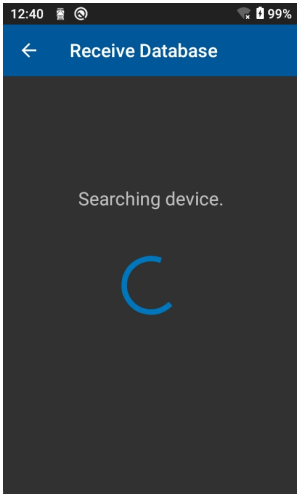
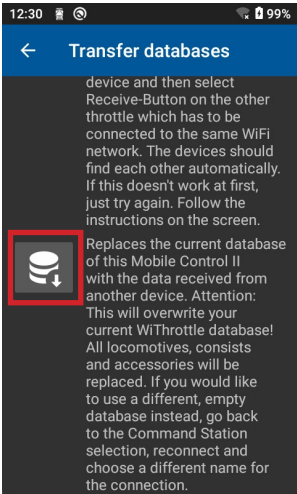
 If you click "OK" here, all locomotives, consists, accessories, and accessory panels contained in the current database will be deleted and replaced with the contents of the saved database. Please consider carefully whether you want to do this!

14.3. Transferring Databases

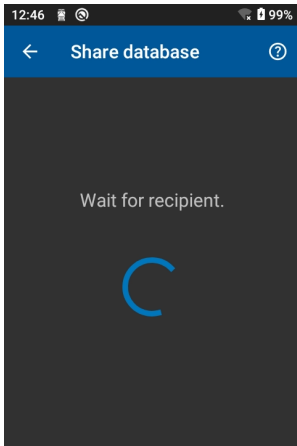
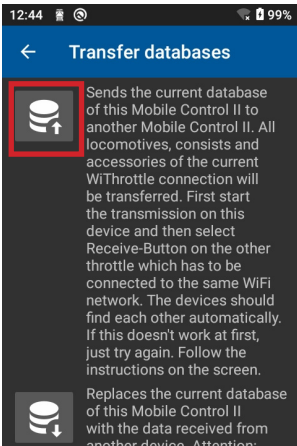
If you want to use multiple Mobile Control Pro handheld controllers with your Z21® or Wi-Throttle™ command station, the databases can be transferred to avoid having to enter data on each device.

To do this, both Mobile Control Pro handheld controllers must be on the same Wi-Fi network. The transfer is carried out wirelessly.

- On the "receiver" Mobile Control Pro, first select the "Transfer Databases" option from the Z21® settings.
- On the receiver, select the second option "Replaces the current database of this Mobile Control with the data received from another device." Confirm the confirmation prompt with "OK." The device will now wait for a transmitter. You can cancel the process at any time by pressing "Back".



- On the transmitter, select the first option "Sends the current database of this Mobile Control to another Mobile Control." The device will now attempt to contact the receiver.



Central Station® • Configuration Menu

If both devices are found, a security code is displayed, which must be confirmed before the transfer can begin.

 The current database of the sender is always transferred and the current database of the receiver is overwritten.

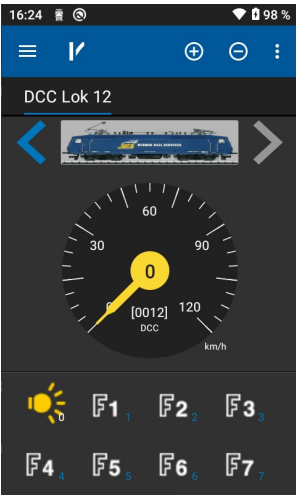
15. Operation with Märklin® Central Station®

In this section, we discuss special features of operation with Märklin® Central Station®.

Currently, creating and editing locomotives, consists, and accessories is not possible when operating with the Central Station®. All settings must be made directly at the central station. The Mobile Control Pro takes over all necessary settings from the central station.

15.1. Locomotive Symbols

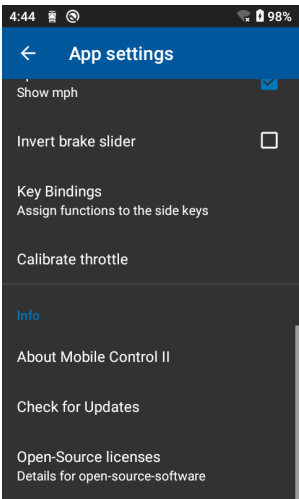
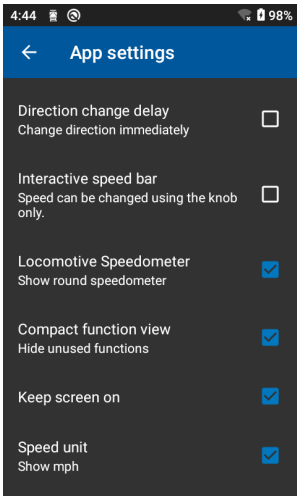
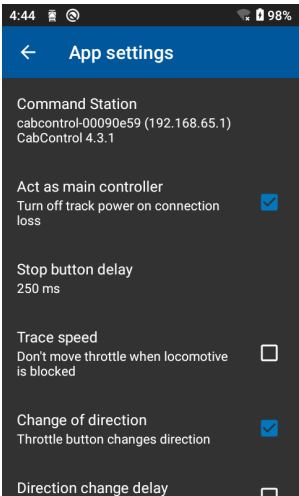
The locomotive symbols and function key symbols are adapted to the Märklin® look when operating with a Central Station®. This way, operation is as you are used to from your central station.



16. Configuration Menu

As described in section 10.1, you can access the "App Settings" from the main menu, where you can configure options.

 Depending on the app's software version, additional settings will be added here in the future. This overview is based on app version 2.0.3.



Configuration Menu

16.1. Command station connection

Here, the connection to the command station can be checked and changed at any time. The name, IP address, and protocol of the currently connected command station are displayed directly.

16.2. Main Control

If the "Device is main control" option is selected, the command station will go to "Stop" if the connection is lost (e.g., because the Wi-Fi reception is poor). Currently works with ESU command stations.



If the app is closed normally or the Mobile Control Pro is shut down, the track voltage remains on. This setting only concerns abnormal malfunctions.

16.3. Stop Delay

Pressing the "Stop II" touch button normally immediately turns off the track voltage. However, depending on the thickness of your thumb and the gripping method, it may happen that the Stop II button is accidentally touched briefly when moving the rotary control. In this case, the Stop Delay helps prevent accidental activation.

16.4. Speed Follow

Normally, the rotary knob on the throttle follows the speed of the locomotive. This can negatively impact battery life if locomotives are changed frequently. Therefore, following can be disabled here.

16.5. Direction Change

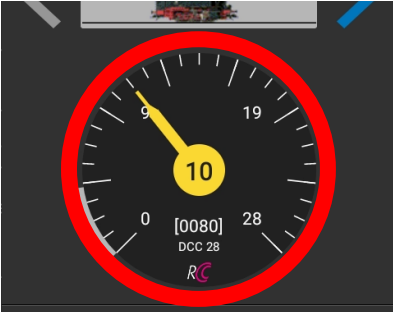
Here, changing the direction of travel with the rotary knob can be deactivated if desired. In this case, the control will still "click" when it is turned counterclockwise beyond zero, but the direction will not be changed.

16.6. Delay

Here you can set the direction of travel on the rotary knob to only change if the control is pressed for at least 300 milliseconds. This prevents accidental switching if the control is accidentally turned too far when returning to zero.

16.7. Interactive Speed Display

Normally, you can only change the locomotive's speed with the rotary knob. If you enable this option, you can also tap the outside of the speedometer ring (see red ring in the figure below) to change the speed. Since this area is usually also used to swipe left and right to select a different locomotive, it may happen that the speed changes when changing locomotives. Therefore, this option is disabled by default.



16.8. Speedometer Display

Here you can switch to the old view of app version 1.x instead of the round speedometer. This is only for compatibility purposes. We recommend keeping the round speedometer view, as it offers more options.

16.9. Compact Display

Normally, unused function keys in the locomotive control screen are displayed with "gaps." If you would rather have them hidden, simply activate the compact display.

16.10. Keep Screen Active

If this option is set, the screen will never turn off as long as the app is active. This setting ignores the Android settings (see section 9.2.2.2). A constantly active screen has a negative impact on battery life, but can be useful for hectic railway operations.

16.11. Speed Unit

Here you can switch the display between "km/h" and "mph." The unit set here will be displayed on the speedometer when the locomotive has been switched from speed steps to speed, as described in Section 11.4.6.

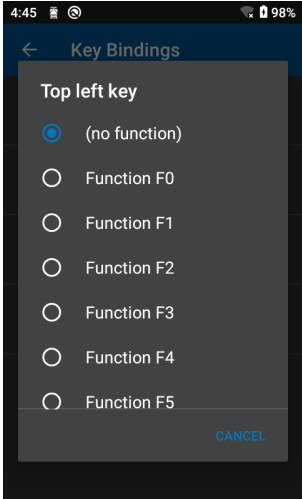
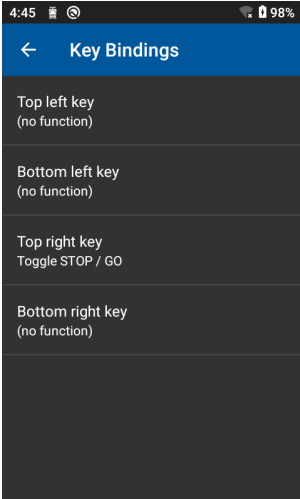
16.12. Invert Brake Controller

Here, the direction of the brake controllers can be inverted if desired. While the brake controllers are normally activated from top to bottom (see Section 11.7), they are activated from bottom to top when the inversion function is active.

16.13. Key Assignment

In the "Key Assignment" menu item, you can assign functions to the four hardware buttons (two on the left and two on the right of the housing). The assignment is global for all locomotives.

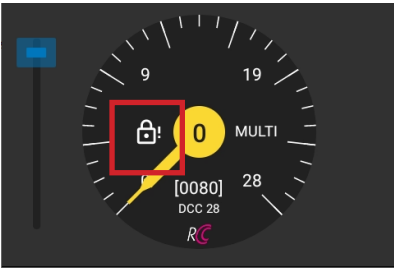
- Select the button you want to assign.
- Select the function you want to assign to the button from the list.



Configuration Menu

In addition to the function keys F0 to F30, other functions such as "Speed Steps Up/Down," "Emergency Stop," "Direction Switch," "Stop/Go," or "Tab Forward/Back" for changing locomotives are available.

A special feature is "Lock Speed": if this function is assigned to a key, the speed change can be locked using the rotary control when the key is pressed. A symbol in the speedometer indicates the lock.



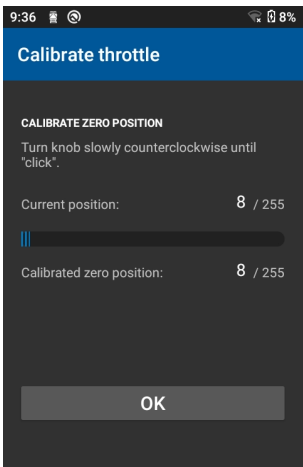
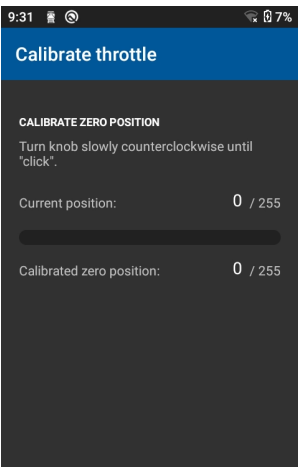
This can be helpful if you wear the Mobile Control Pro around your neck during breaks and want to prevent the rotary control from being accidentally operated with body parts...

16.14. Calibrating the Rotary Knob

Due to tolerances and wear from frequent use, the zero point of the rotary knob may need to be recalibrated. If you notice that the locomotive's direction of travel can no longer be changed or that the controller no longer moves smoothly to the "zero" position after a change in direction, you should recalibrate.

First, the control knob must be turned counterclockwise until the mechanical microswitch is activated. You will usually hear a quiet "click" and the controller cannot be turned any further. You will see a bar on the screen indicating the current position of the control knob.

Now simply release the control knob. It should automatically return to the zero position (clockwise). A (small) motor movement should be visible. That's it! The app saves the new zero point automatically. You can repeat the calibration at any time.



16.15. Display version number

The "About Mobile Control Pro" button displays the software version number of the Mobile Control app. This is important if you need to contact Technical Support.

16.16. Check for Updates

If the handheld controller has an internet connection, it will check for new versions of the Mobile Control Pro app or other factory-installed apps and download and install them if requested.

17. Software Update

Due to constant development, your Mobile Control Pro handheld will also require software updates. There are two ways to install updates:

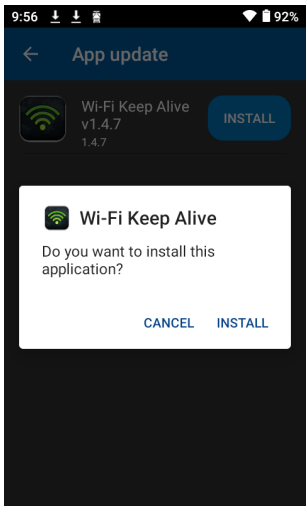
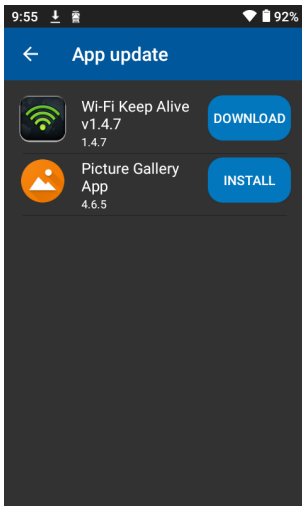
- If the handheld has an internet connection, it can search for new software directly from the ESU servers and install it (see section 16.16). This is the easiest method.
- If you are unable to connect the Mobile Control Pro to the internet, at least temporarily, a Windows® PC software is available. This also downloads the updates from the internet and copies them to the handheld via a USB cable connection. This method was the only possible update option before app version 2.x.



Both update methods only update the installed apps. The underlying Android system cannot be updated over the air. Since ESU adapted the operating system based on Android 10 to the hardware itself, an operating system update is not recommended in our opinion.

17.1. Wi-Fi Update

- First, ensure that your Mobile Control Pro has an internet connection. As shown in Section 8.1.2., the internet connection is displayed directly in the Wi-Fi icon.
- Start checking for software updates as shown in Section 16.16. If new software versions are available, they will be displayed.
- Select "Download" and then "Install".



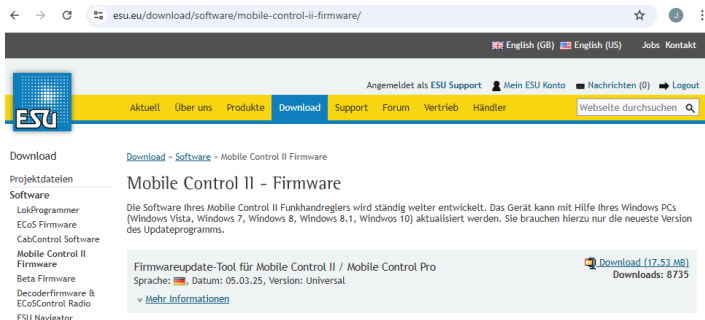
Update

 Android may ask you to grant permission for the installation. This is a normal process that you must confirm. Otherwise, the software cannot be installed.

- Repeat the process for all available updates.

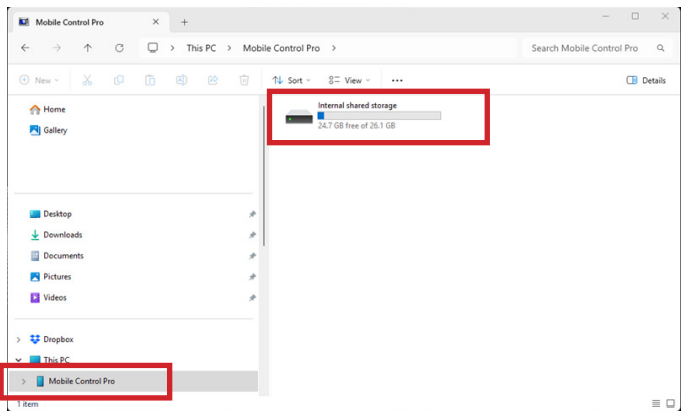
17.2. PC Software

In many cases, the Mobile Control Pro will only be connected directly to the control unit and therefore cannot be updated automatically. In these cases, you can download the latest firmware from the download area of the ESU website and install it as shown here.

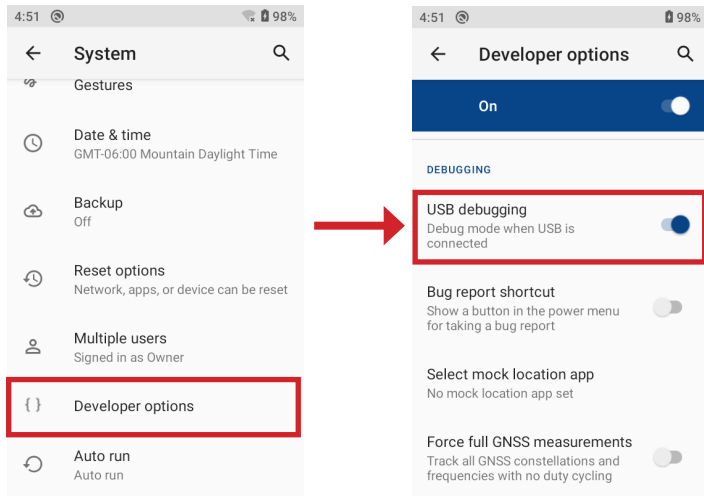


First, install the update software on your PC. Missing Microsoft .NET components may be installed from the Microsoft website during installation. In this case, the installation will take longer. After installation, launch the software. The software will now search for a Mobile Control Pro connected to a USB port. Now connect the powered-on Mobile Control Pro to a USB port on your computer.

The device should be automatically recognized and integrated into Windows Explorer, similar to the one shown here:

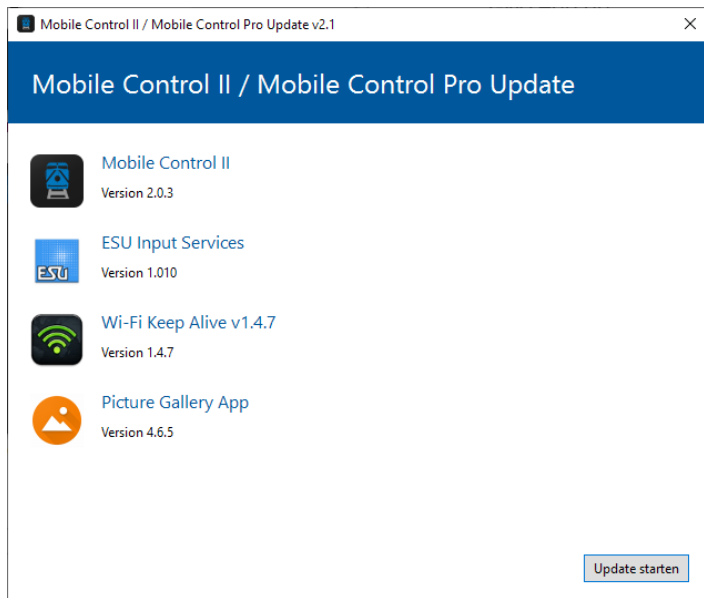


If the device does not appear in Windows, please first check whether anti-virus software has blocked the USB ports. If this is not the case, but the device still does not connect, check whether USB debugging is enabled on the Mobile Control Pro. To do this, first access the Android setup on the device, as shown in Section 9.2., then select "System," then "Developer Options," and then scroll down to the "USB Debugging" setting. Enable this option.



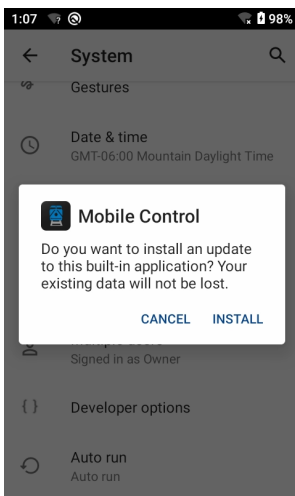
The software automatically offers updates for all apps provided for the ESU Mobile Control.

Click "Start Update" to begin the update.



ESU Support • Technical Specifications

For security reasons, the Android operating system will ask you to confirm the installation in the next step. To do so, you must click the "INSTALL" button directly on the screen of your Mobile Control handheld controller.



The operating system will then show you which permissions the new app you're installing requires and whether you agree. You must confirm this step by clicking the "INSTALL" button.

After a few seconds, the first app will be updated, and you should initiate the update of the next app by clicking the "Install Next App" button on your PC screen. Here, too, you must confirm directly on the Mobile Control Pro screen.

18. ESU Support

If you have specific technical questions regarding your Mobile Control Pro, you are welcome to ask them in our online forum. You only need to register first.

18.1. Registration

So that we can provide you with optimal support, we ask you to create an account on our website, accessible at <http://www.esu.eu/>. This will give you access to our support forum.

18.2. Forum

In the ESU Support Forum, you can ask questions about all ESU products. Our support team will try to solve any problems together with you. This way, everyone benefits from everyone's knowledge, as other users can also answer questions.

18.3. Technical Hotline

If you ever get stuck, your first point of contact is the dealer from whom you purchased your Mobile Control Pro. They are your competent partner for all questions about model railways.

You can also ask your questions about ESU products on our homepage in our support forum at www.esu.eu. The support forum is the preferred way to get quick and competent answers.

In the "Support" section of our homepage, you will also find many answers to frequently asked questions (FAQs).

You can also reach us via the traditional channels: However, we ask that you, if possible, contact us by email. Emails are usually answered within a few days, but may take longer during peak season.

The telephone hotline is usually very busy and should therefore only be used for special requests.

Of course, we are always happy to help:

Per Telephone: 1-720-303-3990
Tuesday & Thursday
8am – 12pm Mountain Time
Per E-mail: support@loksound.com
Per Mail*: ESU LLC
3625 Betty Dr. Suite A
Colorado Springs, CO 80917

www.esu.eu

* If you send a letter via mail, be sure to include your phone number so we can contact you!

19. Appendix

19.1. Technical Specifications

Wireless system: 2,4GHz Wi-Fi system. 11-54Mbps 802.11 b/g/n
Bluetooth V4.0(HS), BLE Support
Display: 3.2-inch display with 800x480 pixels
CPU: Quad-Core 64-bit Cortex™-A53 CPU, 1.5GHz
GPU: Imagination PowerVR GE8300 GPU
RAM: 2 GB LPDDR4
ROM: 32 GB eMMC flash drive
Operating system: Google Android 10 "ESU Custom"
Dimensions: 171 mm x 60 mm x 25 mm
Weight: 160 grams (with battery)
Battery: LiPo battery, 3.7V, 1650mAh capacity

19.2. Dial Control API

If you would like to integrate the Mobile Control Dial Control into your own apps, you are welcome to do so at any time. We have provided all the necessary sources and source code on a dedicated Github page:

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

Warranty

24-Month Warranty from Date of Purchase

Dear Customer,

Congratulations on your purchase of an ESU Mobile Control Pro handheld controller. This high-quality product has been manufactured using the most advanced manufacturing processes and has undergone careful quality controls and testing.

Therefore, ESU grants you, with the purchase of an ESU product, a manufacturer's warranty of 24 months from the date of purchase, in addition to the statutory national warranty rights you are entitled to from your ESU dealer as the contractual partner.

Manufacturer's warranty of 24 months from the date of purchase

Warranty Conditions

This warranty applies to all ESU products purchased from an ESU dealer.

Warranty services will only be provided if proof of purchase is included. The warranty certificate, fully completed by the ESU dealer, along with the purchase receipt serves as proof of purchase. We recommend keeping the purchase receipt together with the warranty certificate.

Warranty Content / Exclusions

The warranty covers, at the discretion of ESU, LLC, the free repair or replacement of the defective part if it is demonstrably due to design, manufacturing, material, or transport defects. Further claims are excluded.

The warranty is void:

1. In the case of wear and tear or normal wear and tear of wearing parts
2. In the case of modifications to ESU products using parts not approved by the manufacturer
3. In the case of modifications to the parts, in particular missing heat-shrink tubing or cables extended directly on the decoder
4. In the case of use for a purpose other than that intended by the manufacturer
5. In the case of non-compliance with the instructions provided by ESU in the operating instructions

For liability reasons, no inspections or repairs can be carried out on components installed in locomotives or cars. The warranty period is not extended by repairs or replacements.

Warranty claims can be submitted either to your retailer or by sending the defective product along with the warranty certificate, proof of purchase, and a description of the fault directly to ESU, LLC:

ESU, LLC
ATTN: Service
3625 Betty Dr. Suite A
Colorado Springs, CO 80917

