PIKO
SMARTCONTROL
wlan

PIKO G-SmartControl$_{wlan}$ – the digital future of Garden Railway control systems!

USER MANUAL

Dear PIKO fans,

We are pleased to present to you the all-new **PIKO G-SmartController**$_{wlan}$ Digital Command Control System– an innovative and, above all, future-proof DCC system that was developed entirely in-house and is fully tailored to the needs of model railroaders looking for a convenient yet easy-to-use system for digital model railroad control.

Running trains, throwing switches, controlling signals, creating routes, and programming CVs has never been so easy. The new **PIKO G-SmartControl**$_{wlan}$ is the perfect DCC system for beginners and seasoned model railroaders alike. And, thanks to the **PIKO G-SmartControl**$_{wlan}$ modular design, adding boosters is a snap for those wanting to expand the size of their layout.

The Smart Controller's throttle features easy-to-understand symbols clearly arranged on the color display. This makes operating the SmartControlwlan easier and more intuitive than traditional DCC systems. What's more, the **PIKO G-SmartController**$_{wlan}$ is designed in such a way that it can be conveniently operated with one hand.

The **PIKO G-SmartController**$_{wlan}$ and **PIKO G-SmartBox**$_{wlan}$ are connected to each other via a self-contained WLAN network.
This allows the operator freedom of movement around the layout.

A special feature of the SmartControlwlan system is it allows up to four **PIKO G-SmartController**$_{wlan}$ throttles to be paired with one **PIKO G-SmartBox**$_{wlan}$ - for even more fun with family, friends or on a club layout!

NOTE: The colors and shapes of the images and illustrations in this user manual correspond to the original products only to the greatest extent possible.

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PIKO G-SmartControl$_{wlan}$

User Manual

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PIKO G-SmartControl$_{wlan}$ is a Digital Command Control (DCC) system designed for model railroaders of all skill levels. It consists of the **PIKO G-SmartController**$_{wlan}$ handheld throttle and the **PIKO G-SmartBox**$_{wlan}$ command center which are connected to each other via WLAN.

With **PIKO G-SmartControl**$_{wlan}$ DCC locomotives can be controlled, accessories can be switched, and even routes can be triggered. It provides all the functions required for convenient digital model railway operation.

The **PIKO G-SmartBox**$_{wlan}$ serves as the heart of the **PIKO G-SmartControl**$_{wlan}$ system. Clearly labeled buttons and ports ensure smooth operation while colored LEDs give you a quick overview of the system status.
The **PIKO G-SmartController**$_{wlan}$ is a state-of-the-art wireless handheld throttle for the **PIKO G-SmartControl**$_{wlan}$ system. Up to four SmartControllers can be used simultaneously on a single **PIKO G-SmartBox**$_{wlan}$.
The shape and weight distribution of the PIKO G-SmartControllerwlan are designed so that it fits perfectly in your hand. The buttons and keypad are arranged such that everything can be controlled with one hand; whether for right-handed or left-handed individuals.

System properties

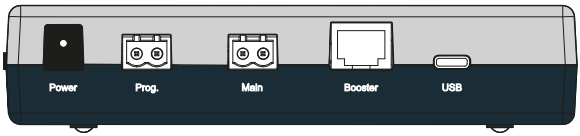
- Up to 16 locomotives can be controlled individually or as part of a consist. An almost unlimited number of locomotives can be managed on the SD card.
- The **PIKO G-SmartControl**$_{wlan}$ is RailCom Plus® compatible, so all locomotives and rolling stock equipped with RailCom Plus decoders will automatically register with the system.
- The **PIKO G-SmartBox**$_{wlan}$ supports the 14, 28 and 128 speed step format.
- The data format can be set individually for all locomotive addresses.
- Up to 69 functions can be activated for each locomotive address.
- For vehicles equipped with special LGB decoders, special locomotive functions can also be output serially in the DCC14 format (DCC14S).
- The system allows up to 128 accessories with addresses ranging from 1 to 2048.
- The **PIKO G-SmartControl**$_{wlan}$ system features a route memory for up to 18 different train routes. The accessories can be grouped into routes of 9 control commands each.
- Any accessory addresses between 1 and 2048 and pause steps can be inserted in each track.
- The command station delivers a 5 A output to the main track and features short circuit and overload protection. This enables multi-train operation without having to use additional boosters (PIKO Booster).
- The **PIKO G-SmartBox**$_{wlan}$ has a separate programming track output. When programming on the programming track, the main track output is switched off.
- The **PIKO G-SmartControl**$_{wlan}$ supports both the programming track as well as programming on the main track (POM and XPOM) for DCC-Decoder.
- PIKO G-SmartDecoders from version XP 5.1 and upwards can be updated with **SmartControl**$_{wlan}$
- All **PIKO G-SmartControl**$_{wlan}$ components can be updated.
- The **PIKO G-SmartControl**$_{wlan}$ can be operated via WLAN in AccessPoint mode (the system's self contained WLAN network), or by integrating the system into an existing home network in Station mode.

System connections

The **PIKO G-SmartBox**$_{wlan}$ has ports for a main track, a programming track, a PIKO G-SmartBooster, as well as USB-C port and a socket for the power cord.

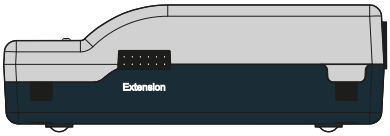
Connection points on the PIKO G-SmartBox$_{wlan}$

Back side



Power: Connection port for the 22V DC power cord
Prog.: Port for the programming track (only for decoder programming, no traction voltage)
Main: Port for the main track with DCC digital voltage
Booster: Connection port for PIKO-SmartBooster
USB: USB-C port for PSCw app and firmware updates (cable included)

Right side



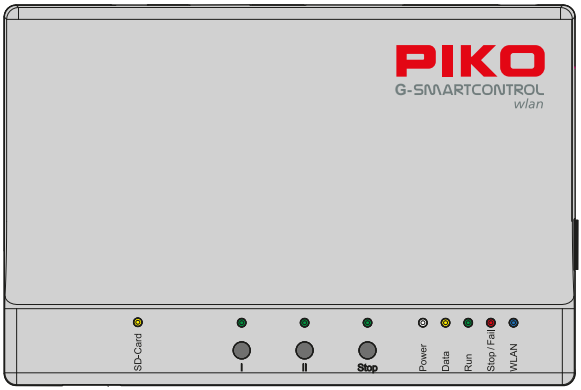
Extension: Connection port for SmartController$_{wlan}$ accessories

Front side

SD-card: Slot for the micro SD-card

The included micro SD-card is used to store locomotive images and to transfer updates to the control unit. In addition, the information stored in the system about locomotives, accessories and routes can be saved on the micro SD-card and later transferred back to the SmartController (backup function).
The SD-card must be inserted to provide all functions of the SmartControl$_{wlan}$ system.

Controls and display elements of the PIKO G-SmartBox *wlan*



Buttons

I:	Open use button (you can program this button for any function you want)
II:	WLAN "Fast Connect" (adjustable)
Stop:	Track power off / on A long press on start-up resets the SmartBox to factory settings.

LEDs

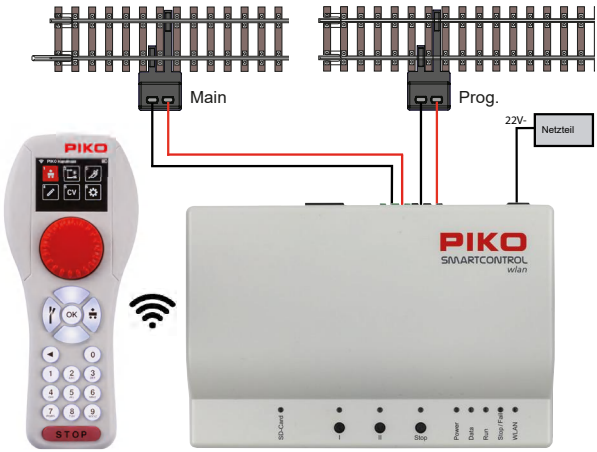
SD-Card:	SD-card data transfer
I:	Button I on/off
II:	Button II on/off
Stop:	Stop button on/off
Power:	System is powered on
Data:	SmartController is receiving data
Run:	Main track is switched on, blinking if Prog. track is switched on
Stop/Fail:	Main track is switched off / system fault
WLAN:	WLAN on / off

1. Putting the PIKO G-SmartControl$_{wlan}$ into operation

First connect the main track port (Main) of the **PIKO G-SmartBox**$_{wlan}$ to the main track and, if necessary, the programming track port (Prog.) to the programming track. The main and programming tracks must not have any electrical connection to each other.

Make sure the SD-card is fully inserted into the SD-card slot.
Now turn on the operating voltage by plugging the power supply cord to the **PIKO G-SmartBox**$_{wlan}$.
The following control LEDs will now illuminate: SD-card (yellow, briefly), Power (white), Stop/Fail (red) and WLAN (blue; blinking).

Now insert the included battery into the battery compartment on the back of the **PIKO G-SmartController**$_{wlan}$. Make sure the battery is oriented correctly to its contacts. Reattach the battery compartment cover with the enclosed screw. The **PIKO G-SmartController**$_{wlan}$ switches on automatically. If the battery is already inserted and the throttle turned off, press and hold the "STOP" button for approx. 3 seconds to turn the throttle on again. After the PIKO start screen, the locomotive selection menu will appear on the display and the "STOP" button will flash (track voltage is turned off).



Caution:

The SmartController throttle and SmartBox are not paired to each other from the factory. There is no WLAN connection and the WLAN symbol on the throttle's display is crossed out!
The first step now must be to activate the WLAN connection (pairing). If both devices have not been used before, please carry out the "FastConnect" function by following the instructions on the SmartController's screen and pressing and holding button II on the control panel until the "run" and "Stop/Fail" LEDs flash in sync. Then confirm the information screens on the throttle´s display within 30 seconds with "yes". You can switch between "yes/no" by pressing the "left / right" buttons and confirm your setting with the button "OK".

The devices are now paired when the two LEDs on the control panel stop flashing and the active WLAN symbol appears on the throttle.

More information on "FastConnect" can be found in Chap. 3.8.5 "Select WLAN network".

2. The controls of the PIKO G-SmartControl$_{wlan}$

Overview of the controls

Display

The **PIKO G-SmartController**$_{wlan}$ features an illuminated TFT color display that can be adjusted to the user's preference. The symbolism is designed for intuitive control and is largely self-explanatory. Each icon is clearly marked for easy use of the **PIKO G-SmartControl**$_{wlan}$ digital system.

The WLAN signal strength, throttle ID and battery level are displayed in every menu on the top line of the display. Depending on the application there will appear an hourglass (data is being loaded or processed), the letters "ABC" or "abc" to distinguish between upper - and lower-case letters, the letter "R" will appear to signify RailCom Plus® registration and, the letter "P" will appear during CV programming mode via the programming track and the letter "S" (STOP) for the track voltage being turned off.

Throttle

The throttle features endless rotary dial control for setting the speed, changing direction of travel and emergency stop for the currently active locomotive (double-click).
Adjustable for AC drive controller mode (factory setting) and DC drive controller mode (chap. 3.8.3).

Buttons

The backlit keys of the **PIKO G-SmartControl*wlan*** keyboard allow all control steps to be performed comfortably. The durable keys have a clearly perceptible pressure point and are nearly wear-free. The brightness of the keyboard backlight can be adjusted to suit individual needs.

USB-C port

The **PIKO G-SmartControl*wlan*** contains a USB cable that is used to charge the system via the USB-C port. Charging is also possible while driving. For this purpose, a suitable power supply (5V DC, 1A, not included) with a suitable USB cable can be used.

3. Operation of the PIKO G-SmartController*wlan*

3.1. Start

After the controller is switched on, it is in the track selection menu and the "STOP" button is flashing (track voltage switched off).
The "STOP" button can now be used to switch on the voltage at the main track output ("STOP-Button" light will switch off and the "Run" LED on the SmartBox will light up green).
The track voltage can also be switched off at any time via the "STOP" button or the "Stop" button on the SmartBox.
In this locomotive selection menu, all locomotive data sets can be found that have already been created via the editing menu, or have been automatically generated via RailCom Plus® capable locomotives. DCC locomotives are factory-set to address "3" and will show up on your system as "3" until you give the locomotive a new address.

In the true plug-and-play spirit, you can start operating your model railway immediately, provided that the locomotives used are equipped with RailCom Plus® compatible decoders such as the PIKO G-SmartDecoder XP. These decoders automatically register with all the data belonging to the vehicle on the PIKO G-SmartBoxwlan after the track is laid and the track voltage is switched on via the "STOP" button and can be operated directly.

NOTE: During operation, the throttle may display information windows. These windows can be closed with any key, or they will disappear automatically after about 10 seconds. Please observe the information displayed as appropriate.

3.2. The main menu

The menus for controlling rolling stock and accessories as well as device settings are available under the main menu.

The menus displayed can either be selected with the keypad using their associated number (top left in the menu field) or selected using the navigation buttons (up / down / left / right) and then confirmed with the "OK" button .

1 [ ]: Locomotive menu (for selecting available locomotives)
2 [ ]: Accessories menu (for selecting available accessories)
3 [ ]: Routes menu (for selecting train routes you have created)
4 [ ]: Edit menu (for editing locomotives, accessories and train routes)
5 [CV]: CV programming menu (CV-programming and decoder updates)
6 [ ]: Settings menu (for selecting device settings)

You can return to the main menu from each of these menus by pressing the "back" button.

3.3. The locomotive menu [ ]

In the locomotive menu, you can choose from all available locomotives which one you want to operate. Up to 16 locomotives can be run simultaneously. If a locomotive is selected and is currently running on the layout, you can still switch to another one. The previous locomotive will continue to run at the parameters you left it at until you select it again and change them.

To begin operating a locomotive with the **PIKO G-SmartController**$_{wlan}$ you first call it up from the locomotive selection list by pressing the number key that matches the locomotives address (found in the top left of the field). The locomotive menu is factory set to locomotive address "3". The locomotive can also be selected by using the navigation buttons (up / down / left / right) and pressing the "OK" button.
Locomotive Call via Decoder Address: By pressing the "down" button for about 2 seconds, you can select a locomotive by its decoder address.
A field will appear where you can enter the desired locomotive address; select "Save" to complete the process. This locomotive will now be temporarily available in the locomotive selection until the control unit is turned off.

If more than six vehicles are available, two triangles appear next to the vehicle fields. The filled-in triangle indicates the direction in which additional locomotive records can be accessed using the "up" or "down" buttons. If the desired locomotive is not in the list, it must first be created in the locomotive data editing menu (Section 3.6.1).
If the selected locomotive has not yet been called up by this controller and the "Last command applies" option is not enabled in the controller's settings menu, a confirmation window will appear asking whether the locomotive should be selected. If the answer to this question is "Yes," the system first checks to see if any other controller is currently controlling this locomotive. If no other controller is controlling this locomotive, it is taken over immediately. If this controller was the last one to access the locomotive, a green dot appears in its locomotive field, indicating that it is immediately available.

Once the desired locomotive has been selected, it can be controlled directly using the large speed control knob. This speed control knob, which has no limit stop, automatically adopts the saved speed of the newly selected locomotive when switching locomotives.
The locomotive image previously saved in the locomotive editor appears on the display; below it on the left is the selected speed level with a direction arrow, along with the speed bar below it.
If the direction arrow points to the right, the locomotive moves forward; if it points to the left, the locomotive moves backward. When the speed control is turned to the right, the locomotive moves in the indicated direction at an

increasing speed. Pressing the dial reverses the direction of travel when the speed is set to zero. If the dial is pressed once while the locomotive is running, the locomotive will stop at its programmed deceleration rate. Only when the speed control is pressed again will the direction of travel be reversed. (Like with AC throttles). If the dial is pressed twice quickly while a locomotive is running, the locomotive stops instantly without any braking delay. Whichever DCC speed step setting the locomotive is programmed for, 14, 28, or 128, will be displayed under the speed bar. Below the speed bar the locomotive address and name are displayed. The current status of all available locomotive functions is found in the right half of the display. If a function is switched on, the corresponding function icon displays a colored background.

Locomotive functions are activated using the SmartController's keypad. The light function (F0) is always activated using the "0" key. For all other functions, the field in the display screen shows which keypad button to press to activate a function.

The two triangles to the left of the function field indicate whether additional functions are available. If the triangle is solid white, you can scroll line by line in the corresponding direction of the triangle by using the "up" or "down" keys. Whether more additional functions are available depends on whether they are defined for this locomotive data record.

DC Speed Control Mode

If the speed control is turned to the right from speed level zero, the locomotive moves forward in the direction of travel at an increasing speed. If the speed control knob on the **PIKO G-SmartControl*wlan*** is turned counterclockwise, the locomotive's speed is reduced until it comes to a stop. Turning the knob further counterclockwise accelerates the locomotive in the opposite direction. DC speed control mode can be enabled in the controller's settings menu (Section 3.8.3, "Configuring Speed Control Behavior").

Additional functions

DCC Direct: If the "Down" button is pressed and held for 2 seconds in the locomotive control menu, a non-RailComPlus-compatible decoder that does not register automatically can be used temporarily by entering a locomotive address. This allows a locomotive to be controlled directly without first having to create a complete locomotive data record.

Double-Heading: If the "Down" button is long pressed a second time, a second locomotive (the traction locomotive) can be selected and coupled with the locomotive currently assigned to the locomotive controller (the base locomotive) to form a double-heading consist. The consist is indicated by a symbol showing two locomotives. To dissolve a double-heading consist, the base locomotive is coupled with itself, i.e. the base locomotive is selected as the traction locomotive.

Speedometer reading:
If you press the "down" button in the speed controller menu once more for about two seconds, the display switches to a DEUTA "speedometer display" showing the speed levels. The "F0" function can also be switched here. Pressing the "back button" or the "down button" for approx. two seconds switches back to the standard display.

3.4. The accessory menu [ ]

The SmartControl system will accommodate up to 128 DCC accessories with addresses between 1 - 2048 (up to 54 addresses in the StartSet version). Symbols (icons) are available for accessories such as street lamps up to four-aspect illuminated signals, which must be switched via three different DCC addresses. The accessory menu automatically recognizes RailCom® accessory decoders. The SmartController is not pre-programmed for any specific accessory, so they must be entered into the system via the "Edit accessory" menu. (see chap. 3.6.2)

Once an accessory is entered into the SmartControl system, it can be selected on the SmartController by using the keypad (matched to the accessory's icon on the display) or by highlighting the accessory's icon using the navigation keys and pressing "OK".

Note: While in Accessory mode, the locomotive that was last being operated will continue to be operated by your throttle. The name of the locomotive, its speed and direction of travel will continue to be displayed in the lower left corner of the display. Switching the throttle to accessory mode does not mean that you lose control of the locomotive you were operating..

If an accessory is called up, its settings are displayed on the screen and can be switched directly via the keypad or the navigation buttons and subsequently confirmed by pressing "OK".

Multi-aspect signals, three-way turnouts and slip switches (turnouts/crossovers) with multiple drives can be switched at the same time using just one command. The accessory menu will then display them according to their current position.

Signal Position Feedback via RailCom®

If RailCom-compatible switching decoders are used (e.g., PIKO SD 2000), adjusting the turnout drives during operation is indicated by a "!" symbol on the display of the corresponding turnout. If the turnout position is now corrected manually using the turnout actuator or by directly setting the turnout address, the "!" symbol will also disappear.

Switching accessory addresses directly

The accessories menu allows you to switch an accessory that has not yet been programmed into the SmartControl system. This is convenient for testing some accessory decoders or for testing out a train routing. To do this, enter the accessory menu and press the "up" button for approx. 2 seconds. Enter the desired switching address in the "Address" field and confirm by pressing "OK". You can now switch the accessory directly using buttons "1" (red) or "2" (green). The fields "R" and "G" can also be selected via the navigation buttons and then confirmed by pressing the "OK" button. This will switch the accessory. During switching, the relevant field (R or G) displays a colored background, and no other switching command can be triggered at this time.

3.5. The routes menu [ ]

The routes menu is used to send a sequence of commands to digital accessories like turnouts with the push of a button. It makes operating a complicated track plan much easier, where, for example, a train may need to leave a large station and three-way turnouts and multiple-aspect light signals need to be switched at the same time. In this situation, at least four switching commands would have to be sent at once.

You can access the route menu by selecting option "3" from the main menu or by using the navigation keys followed by the "OK" button.
This menu supports a maximum of 18 routes, each with 9 commands (3 sets of 6 in the starter set).
Routes can consist of a sequence of various control commands for accessories, pause commands, and the activation of other routes (sub-routes). They can be provided with two-line designations and thus there are hardly any limits to creativity for the routes to be created.

No routes are preinstalled by default. These must first be created using the route editing menu (chap. 3.6.3).
If multiple routes are stored, they can also be activated using the number keys according to their position on the display, or using the navigation keys followed by the "OK" button.
When a route is activated, the field for that route flashes until all the route's control commands have been sent.
NOTE: The last locomotive controlled can still be controlled using the speed control. The speed setting, direction of travel, and the name of this locomotive are displayed here in the lower left corner.

3.6. The edit menu [ ]

Using the Edit menu, you can program the **PIKO G-SmartControl***wlan* with data for locomotives, accessories, and route settings. To do this, enter the appropriate information for the specified areas as desired and as needed.

You can also use the Edit menu to modify and save data in the desired menus at a later time.

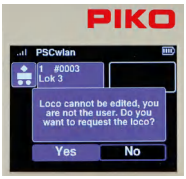
Since the icons in these application menus and the editor menu are the same in places, their field color changes from red to blue to avoid any confusion.

In the editor menu, the application menu whose data is to be edited can be selected using the keypad or the navigation keys and confirmed by pressing the "OK" button.

Here you can select the "Locomotive menu", the "Accessories menu" and the "Route menu".

3.6.1 Edit locomotive data

After calling up the locomotive menu, the vehicles currently available in the system are displayed, along with an additional field (maximum of 16). Using this selection, you can now decide whether to modify an existing locomotive record or create a new one. The desired locomotive is selected using the keypad or the navigation keys and confirmed by pressing the "OK" button.



If you want to edit a locomotive data set that has previously been edited yet the particular locomotive has not been run by your throttle during the current operating session (no green dot), the screen will display a message asking whether this locomotive should be requested from the command center. If necessary, this must be answered with "Yes". If this locomotive data set does not need to be edited, use the navigation key to change your answer to "No" and confirm with the "OK" button.

If you wish to create a new locomotive data set, you should select an empty locomotive data field using the keypad or navigation keys followed by the "OK" button.

After making your selection, you can use the navigation keys to choose whether to edit, save, or delete this record, or to import an existing record.

To edit the record, select the "Edit" field and confirm with the "OK" button.

In the following example, we will create a new locomotive data record for the BR 83.10 steam locomotive. This locomotive is not RailCom Plus®-compatible. It will be configured in DCC format with 28 speed steps, locomotive address 4, the locomotive name "BR 83.10," and several function keys.

Since this is a new locomotive data set, we choose an empty locomotive data field, whose DCC address appears as "0".

Editable data fields are always highlighted in blue. In the first step, the locomotive image is highlighted with the blue editing frame. If you wish to change the image, press the "OK" button. If not, scroll down to the next highlighted frame

To select the image for the BR 83.10, we scroll to the "PIKO" option and select it, as all PIKO locomotive images are available under the PIKO option. If a message appears about a non-existent image (while the SD-card is inserted), please use the bottom menu option "Update" to display the entire image database.
RailCom® locomotive images and your own customer-specific images can be saved to the image database. Your own pictures must first be saved to the SD-card using the PSCw app in order to automatically get the correct display size.

All PIKO locomotive images are now available for selection. You can scroll through the list page by page using the "up/down" navigation keys.

You can also start a search by initial letter. To do this, first press the number key "1" (the letters "ABC" will appear on the top line of the display), and then select the desired letter using the keypad.
When the page with the "BR8310" entry appears, use the navigation key to move "right" to the selection of the four locomotives listed.

Now highlight "BR8310" with the "down" button and then confirm with the "OK" button.

The locomotive image is saved when the "save" symbol is selected and confirmed with the "OK" button.
The display then jumps back to a list of other locomotive data.

The new locomotive image for the BR 83.10 retains a blue editing frame and can be changed again if desired.

To set the DCC speed levels, use the "down" button to switch to the speed level display below the speed bar. It will now be highlighted in blue.

Pressing the "OK" button opens the selection menu for the DCC speed steps.
Now select the desired number of speed steps using the "down" button and confirm with the "OK" button.

DCC 14S refers to the serial output of locomotive functions (LGB).

For convenient speed controller operation, DCC 28 speed steps are generally used.

NOTE: If you select the DCC 14 setting, which was commonly used in the past, the lights will not function properly with current decoders because they will turn on and off with each speed step. In this case, you must adjust the decoder's CV29 setting accordingly (CV29, Bit 1 = 0).

To set the locomotive address corresponding to the locomotive decoder being used, press the "down" button after setting the speed level to highlight the locomotive address field in blue.

By pressing the "OK" button, the previous address becomes a sequence of gray zeros, which can now be overwritten with the desired locomotive address.

As with previous data entry, the address is saved by pressing the "OK" button.

Now you can also change the locomotive name. To do this, use the "down arrow key" to navigate down one more line, which will highlight the current name in blue.

Press the "OK" button" to display the name in gray.

Using the "left" navigation key, you can now delete it character by character. Then enter the desired locomotive name using the numeric keypad, just like on a telephone keypad.

If you want to switch between upper and lower case letters (the active spelling appears in the top line of the display "abc / ABC"), you can do so by using the "down" key.
Special characters can be found under the "0" and "1" keys. A space is inserted with the "right" navigation key.
0: 0 . : ; % & [ ] { } ~ ` | #
1: 1 , ! ?-_+ / ( ) @$ ' " *=<> \ ^

Finally, the entry is confirmed by pressing the "OK" button.

In each locomotive data record, the function keys can also be modified. You can swap function keys, change symbols, and even create new function keys up to F68.

To change the functions of the current locomotive, press the "right" navigation button. Now all functions are displayed in blue

By pressing the "OK" button, the two navigation arrows next to the function key field turn blue and the functions to be changed can now be selected via the keypad.

If functions other than those shown are to be changed, you can use the "up" or "down" keys to scroll line by line to the desired area. The solid navigation arrow indicates the direction in which you can scroll.

Swapping two function keys is achieved by first highlighting one of the two function keys using the keypad (field turns blue). The second function to be exchanged is then selected with the keypad.

In the example shown, it would be the function keys "F2" and "F3", if the key "F3" were now pressed.

To change the symbol/icon of a function key, first highlight it using the keypad and then press the "OK" button.

A total selection of 46 function symbols will now appear which you can scroll through using the "right" and "left" navigation keys.

Once you reach the desired symbol, you can choose whether the function will be a one-touch momentary function or a function that stays in operation as long as the symbol is highlighted. To assign a momentary key function (m), use the "up" or "down" navigation keys. A momentary function means that the function is only switched on for as long as the function key is pressed.

These settings are then saved by pressing the "OK" button.

In the example shown, "F3" horn function key has been changed to an "up / down" symbol.

Once all the entries have been made for this locomotive, press the "back" button on your throttle ...

... to save the new locomotive data set with the "Save" icon.

At this point you can also delete this locomotive data record by using the "Recycle bin" icon.

The display then reverts to the locomotive editor icon of the editor menu. By pressing the "back" button a second time, the display will return to the main menu, where the locomotive can then be selected and tested via the locomotive menu (chap. 3.3 "The locomotive menu").

3.6.2 Edit accessory

To add a digital accessory to the SmartControl system, you first select the accessories symbol in the editor menu by using key 2 or by using the navigation keys followed by the "OK" button.

The next screen displays the accessories that have been entered so far, as well as an additional, empty field.
By default, no accessories are pre-entered.

In this example, we will add a left-hand turnout to the empty field and designate it "W4".

The empty field for this new accessory is now highlighted by using the "5" key or the navigation keys and confirmed with the "OK" button.

The following illustration shows symbols available for various accessories. The left-hand turnout icon can now be selected using key "2" or the navigation keys.

Here, too, the blue navigation arrows indicate that additional options are available in the corresponding direction, which can be accessed using the "up" or, as shown here, "down" button.

Various steps can now be selected in this view. The first step is to enter the name and a brief description of the item.

To do this, select the "Name" field and confirm it with the "OK" button.

The name will appear later in the accessories menu as an identifier for selecting the accessory and the description will appear when the desired item has been called up. After the "Name" field has been selected with the "OK" button, it is highlighted in blue and marked for entry with the "OK" button.

The name is entered using the "telephone keypad" and is a maximum of 4 characters long. To switch between upper and lower case letters, press the "down" key. The active case notation can be found in the top line of the display as "ABC" or "abc". The name entry is then completed with the "OK" button.

The input field for the accessory description will now be framed in blue by pressing the "down" button and marked for input with the "OK" button.

A short two-line description can be entered in the text field.

The description is confirmed by pressing the "OK" button.

Use the "back" button to proceed to the next entries.

You can now use the "down" button to scroll to the "Type" entry and then select it with the "OK" button. Various switching options are available here, which can be activated depending on the type of decoder used.

The "Simple" entry is certainly the most common type and also the factory default setting. The desired decoder type is selected with the "up" or "down" button and confirmed with the "OK" button. The corresponding field is then highlighted in green.

The first entry, "RailCom Decoder," is used for RailCom®-compatible accessory decoders, such as our new products SD 2000 (55032), RD 4000+ (55033) and others.

The entries “Advanced” and “Advanced Time” are intended for accessory decoders that can be designated according to the RCN 213 standard. More detailed information can be found in the respective accessory decoder’s manual.

Use the "back" button and then press the "down" button to scroll to the "Address" entry and select with "OK".

To ensure that the correct accessory decoder is addressed when activated later, the desired switching address must be entered in this submenu. Use the "right" navigation button to select the address field and press the "OK" button to activate it. You can now enter the desired address - in this case, ‘4’ - and confirm it by pressing the "OK" button.

Next, use the "down" button to select the lower field for entering the desired "switching time" and press the "OK" button to activate the entry.

The switching time is entered in 100-ms increments and determines the time after which the control panel sends the turn-off command (pulse duration).

Confirm this entry with the "OK" button, then press the "left" navigation button.

The two arrows next to the turnout symbol now appear in blue.

You can now use the "up" or "down" button to scroll to both directions for the two turnout positions.

The turnout position (here it is diverging) to be set here "green / straight" or "red / diverging" is shown in green in the turnout symbol.

The selection is now activated with the "right" navigation key. This can be seen from the switching address now shown in blue.

You can now use the "OK" button to select the switching direction (shown here in green for the direction straight). The selected setting is displayed in color in the corresponding field.

Once the first direction has been set, you must now use the "left" button to jump to the turnout symbol. The two arrows are now shown in blue again and the "down" button highlights the second turnout position, which is also shown in color in the turnout symbol (here it is the diverging track). Now press the "right" button again to enter the turnout position and set it with the "OK" button.

Use the “back” button to complete the address setting process.

IMPORTANT: At this point, the entries have not yet been saved. If you go up a menu level without saving using the "back" button, a message will appear asking if you want to abort your editing. If you answer "yes", the data set will not be saved.

To save your settings, use the navigation buttons "up" or "down" to go to the "Save" option and confirm it with the "OK" button.

If an accessory that has already been saved is called up in the editing menu, it can be deleted via the "Delete" option after answering a security query.

The display then jumps back to the selection of editable accessories.

The settings for accessories with multiple connections - such as three-way or double-crossing turnouts with two drives, or three- or four-phase light signals that require more than one control address - are briefly explained here using a three-phase light signal as an example.

Select three-aspect light signal.

Enter name and description.

There is no need to enter the type, since the factory setting "Simple" is used automatically here.

Enter the first address for switching between red and green, followed by the second address to turn yellow on or off. Then enter the switching time in 100-millisecond increments.

If the accessory decoder being used is a RailCom-compatible decoder (e.g., PIKO SD 2000), the "Type" menu is also opened and the "RailCom Decoder" option is selected.

In the following steps, enter the red/green switching directions for the signal images shown and then save the dataset.

NOTE: For technical reasons, the final display order depends on the available open field locations. This means that when accessories have been deleted, the next newly created data set is automatically saved in the field location that was just deleted.

Therefore, the new item is not necessarily displayed at the position that was shown when the empty field was selected.

3.6.3 Edit routes

To create routes, select the route icon in the edit selection using the "3" key on the numeric keypad or the navigation keys followed by the "OK" button.

A route can include a sequence of settings for the edited accessory items, pause times, and previously edited routes - known as sub-routes. The maximum number of entries per route is 9. Of course, this limit can be significantly exceeded if necessary by using the aforementioned sub-routes. A total of up to 18 routes are possible.

The next screen displays the routes entered so far, as well as an additional, empty field.

By default, no route is stored, so only the empty field is visible.

To select the empty field, use the navigation keys followed by the "OK" button or the "2" key.

If routes already exist, the empty field can be selected and activated using the corresponding number or the navigation keys.

Like the editor menu for accessories, a selection menu will appear showing each possible process.

For example, we will make a "station arrival" route. This route switches turnout W4 to straight, the three-aspect entry signal LS12 to green (Hp1) and after a pause of 50 seconds back to red (Hp0).

The first step is to enter the name of the new route.

To do this, select the "Name" field and confirm with the "OK" button.

After confirming the "Name" field here as well by pressing the "OK" button, you can now enter the new name using the phone keypad as usual and then confirm by pressing "OK".

The "back" button takes you back to the selection menu of available editing steps.

There, select the "Entries" field and press the "OK" button to activate it.

The display changes to the nine input fields for possible route commands.

The first field is now highlighted for entering the first switching command and confirmed with the "OK" button.

In the following view we can now decide which type of route command should be entered as the first step. There are "accessory circuits", "pauses" and previously edited "routes" (sub-routes) to choose from.

The selection can be made using the navigation keys or using the number shown in each field.

Since the first step is to issue a switching command for turnout W4, the "Accessories" field is selected here.

After the accessory symbol has been confirmed, the accessories already entered into the system are displayed as options.

Left-hand turnout W4 is selected using key "3" or using the navigation keys followed by the "OK" button.

Now you can decide which direction to set the switch. The switch should be set to "straight." To do this, either press key "1" on the numeric keypad, or use the navigation keys to highlight the corresponding field and confirm with the "OK" button.

To keep the turnout drives from overheating, set a delay time in 100ms increments in the input window that now appears and confirm it with "OK".

Finally, we highlight the "OK" symbol and complete this step by pressing the "OK" button.

The first step of our route now appears in the command sequence.

The next step is to call up light signal LS12. To do this, select the second field using the "2" key on the numeric keypad ...

... and then select icon "1" for the accessory in the next window.

Accessories already stored in the system are displayed again.

Light signal LS12 is selected according to its position using key "6" or by using the navigation keys followed by the "OK" button.

Now you can decide which signal pattern to activate. Set the signal to "green" (Hp1). To do this, either press key "2" on the numeric keypad, or use the navigation keys to highlight the corresponding field and confirm with the "OK" button.

Next, enter a delay time in 100-ms increments, confirm it by pressing "OK", and complete the entire step by clicking the "OK" field.

Now this second step also appears in the sequence, and the next step is to insert a fifty-second pause. To do this, select the third field using the "3" key on the numeric keypad ...

... and in the next window, select the "2" icon to activate the pause step.

In the subsequent window, you can jump to the delay field and select it with the "OK" button.

Now you insert a pause time of 50 seconds in 1s increments and confirm it with the "OK" button.

Then you highlight the "OK" field and complete the entry by pressing the "OK" button.

The third step of our sequence will now appear where at the end of the route, entry signal "LS12" is set to red (Hp0) again.

To do this, first select the fourth, still empty field with key "4" or with the navigation keys followed by confirmation with the "OK" button ...

... and then select icon "1" for the accessory item again in the next window.

From the list, select the "LS12" light signal using key "6" on the numeric keypad or the navigation keys, followed by "OK".

Now you can decide which signal display to select. The signal should be set to "red" (Hp0). To do this, either press the "1" key on the numeric keypad, or use the navigation keys to highlight the corresponding field and confirm with the "OK" button.

Now enter a delay time in 100ms increments and confirm it with "OK" and complete the entire step by highlighting the "OK" field.

The next window displays all the control commands for the now-complete route.

The last step is to press the "back" button to save the new route in the following window via the "Save" symbol.

This window also allows us to delete a route (that has been called up in the editing menu) by using the "Delete" icon.

The display will now change to the editor menu for routes. The new route is displayed and, if desired, we can create another route using the empty field.

Pressing the "back" button two more times takes you back to the main menu, in which the newly created route can now be selected and tested via the routes menu.

3.7. The CV programming menu [CV]

In the main menu, the "CV" icon is selected using key "5" on the keypad.

A CV (Configuration Variable) is a memory address in a digital decoder. The content (value) of these CVs determines the behavior of the decoder. The meanings of the respective CVs are found in the instruction manual of the decoder.

The **PIKO G-SmartControl***wlan* offers three types of programming for decoder CVs:

1. Programming on the Main (POM)
2. Programming on the Main for Experts (XPOM) is a new type of programming for experienced programmers
3. A programming track (PROG) is the traditional programming method where the locomotive is placed on an isolated track dedicated just to decoder programming.

The fourth menu (PSD) is intended for updating **P**IKO **G**-Smart**D**ecoder from version XP 5.1 and upwards.

3.7.1 The CV programming on the programming track (PROG)

Since programming on a programming track is the most common, it will be explained first.
First place a locomotive with a CV-programmable decoder on the programming track.

In the programming menu, press the "3" key on the numeric keypad or use the navigation keys to select the "PROG" menu, then press "OK."

This menu offers two options: CV programming only, or editing a locomotive's address, which can be read or changed.
CV programming can be accessed using key "3" and address editing using key "4" on the numeric keypad, or by navigating to the respective option using the navigation keys and then pressing "OK."

If address editing has been selected, the control unit's green Run LED flashes and a red "P" appears in the top line of the next display window.

Here, you can now read the current address and, if desired, change it to any value in the address range from 1 to 10239.
Any necessary programming of CVs 17, 18 and 29 is automatically taken into account and executed.

If CV programming has been selected, the green run LED on the control unit flashes, and a red "P" appears on the top line of the next display window.

Use the navigation keys to jump to the "CV" field and enter the CV number to be read or written. To do this, first press the "OK" button. The input field will now become solid. Now enter the CV number using the keypad and confirm it by pressing the "OK" button again.

CVs numbered 1 through 1024 can be edited.

If you want to read the CV, use the "left" navigation button to select the "read out" symbol and confirm it with "OK".

NOTE: If a message is displayed saying "Prog. Tr. is occupied, please wait.", the programming track is currently being used by another controller and cannot be accessed by this controller.

The read value is now displayed in decimal form in the "Value" field, and as bits highlighted in red in the bit field underneath. The "read out" field is now solid red. The meaning of the CV's individual bits can be found in the instruction manual for the decoder.

If the CV read out failed, the "Value" field will display a "0" and the "Read" field will remain outlined in red.

If this CV is to be programmed with a different value, then select the "Value" field on the right-hand side and confirm with "OK". Now enter the desired value, confirm with "OK" and select the "write" symbol on the left-hand side. Complete this step by pressing the "OK" button.

The value to be written can be entered in decimal form in the "Value" field and in bit representation as bits highlighted in red. For bit-by-bit programming, use the "down" button to jump into the bit sequence, use the "left" and "right" navigation buttons to select the desired bits and confirm each with the "OK" button.

If the CV was written successfully, the "Write" field will now turn solid red.

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3.7.2 The CV programming on the main track (POM)

A prerequisite for main track programming is that the decoder address of the locomotive decoder to be programmed is known. CVs cannot only be programmed but also read via the main track connection of the PIKO G-SmartBoxwlan, provided that the decoder being used is capable of doing so via RailCom®.

NOTE: During main track programming, the currently active locomotive can continue to be controlled.

Call up the "POM" menu in the programming menu by pressing key "1" or using the navigation keys followed by the "OK" button.

Now go to the "Address"field, press the "OK" button, and enter the decoder address you want to edit using the numeric keypad. Finally, confirm by pressing "OK".

If you want to read the displayed CV, use the "left" navigation button to select the "Read" icon and confirm with "OK". You can enter CVs from 1 to 1024 in the "CV" field.

The read value is now displayed in decimal form in the "Value" field and as bits highlighted in red in the bit representation.

If the CV value is to be changed, use the navigation buttons to navigate to the "Value" field and activate it with the "OK" button. Enter the new value using the keypad and confirm it with "OK". You can also change the CV bits in this window (Chap. 3.7.1 " ... programming track (PROG)").

Now use the "left" navigation button to select the "write" symbol on the left-hand side, and finish by pressing the "OK" button.

Other CVs can be programmed in the same way.

To leave main track programming, press the "back" button. The display will again show the programming menu.

During main track programming, the input and action fields behave the same way as they do in the programming menu on the programming track. If a CV has been successfully read or programmed, the corresponding action field turns completely red here as well.

3.7.2.1 The CV programming on the main track for accessory decoders

In the POM menu, you can also access the main track programming for accessory decoders of the **PIKO G-SmartControl**$_{wlan}$. To do this, while the main track programming for locomotive decoders is open, press the button with the turnout symbol for about 2 seconds.

The display now switches to the input menu for CV programming of accessory decoders. If the decoder is an RCN-213-type decoder, the "Advanced" option can be enabled here. Next, you must first enter the decoder address(!) before you can read or write a CV.
The programming itself is performed in the same way as main track programming for vehicle decoders.

3.7.3 The CV programming on the main track (XPOM) *for experts*

The **PIKO G-SmartControl**$_{wlan}$ offers a relatively new type of programming method known as Programming on the Main for Experts (XPOM). This is used to speed up access to CVs and to address the area of the CV banks that can only be accessed via CVs 31 and 32. Up to four CVs can be written with one command. If the decoder is RailCom®-enabled, the system can read four CVs at the same time. This processing is done in decimal or hexadecimal notation.

PLEASE NOTE: The CV numbering starts with "0." So the "real" CV1 here is CV0, the actual CV29 is CV28, and so on! The CV number you enter is therefore always the desired CV - 1!

To start the XPOM process, first place a locomotive with a known decoder address on the main track.
In the programming menu, call up the XPOM menu using key "2" or by navigating with the navigation buttons and pressing "OK".

Now go to the "Address" field, press the "OK" button and enter the address of the decoder to be edited using the keypad. Confirm with "OK".

The line CV basically consists of the values of the "pointer" CVs 31 and 32 (fields 1 and 2) and the actual CV to be edited (field 3). This CV is always between 0 (CV1) and 255 (CV256). If, for example, the decoder instruction manual says "CV31 = 16, CV32 = 0 and CV257 = volume level value" for setting the overall volume, then CV257 is the first CV in this CV bank and is also entered here with CV number 0.

For this example, the values of the three input fields would then be "16, 0, 0".

If the CVs are to be read from the "CV" line, then use the "left" navigation button to select the "read out" symbol and confirm with the "OK" button.

The values read from the four CVs are now displayed in ascending order from left to right in the "Value" fields in decimal or hexadecimal notation. Here are the values for CVs 1–4.

If the values are to be changed, then use the navigation keys to select the desired field and confirm with the "OK" button. Now enter a new value using the keypad and confirm again with "OK". Finally, use the "left" navigation button to select the "Write" icon, and confirm by pressing the "OK" button.

If you want the display to be in hexadecimal format, use the navigation keys to select the "Hex" field and press the "OK" button to activate. Values greater than 9 (A–F) can be entered using the phone keypad or the "up" and "down" navigation keys and confirmed by pressing the "OK" button.
To exit the XPOM programming menu, press the "back" button. The display will now return to the programming menu.

3.7.4 Update menu for PIKO G-SmartDecoder XP 5.1 and further versions (PSD)

This menu can be used to update PIKO G-SmartDecoders beginning with version XP 5.1. The latest firmware can be found in the web shop on the PIKO website and can be copied to the SD-card.

To update the decoder, place the locomotive on the programming track. After selecting the "PSD" field, the next window will display the input field for the address of the desired decoder.

Enter the current address of the locomotive decoder in the "Address" field. To do this, select the address field, press the "OK" button, enter the address, and confirm with the "OK" button.

If the locomotive is on the programming track, the system will search for the decoder and check its type. Once it is identified, the firmware version on the SD-card that is compatible with this decoder type will be displayed, and only then can the update be installed.
Once the decoder has recognized the signal, it will turn on its outputs A0f and A0r (front and rear lights).

Click the "Update" button and press the "OK" button to start the update for this PSD. Please do not interrupt the update process!
Once the update is complete, the progress bar will turn completely green and the SmartBox will emit three short beeps. You can now exit the PSD menu by pressing the "back" button, and the CV menu will reappear.

3.8. The settings menu [⚙]

To assign settings in the **PIKO G-SmartControl*wlan*** devices, the " ⚙ " icon for the settings menu must be called up in the main menu by using key "6" or by the navigation keys followed by pressing the "OK" button.

This is where you'll find the settings options for, for example, the language used (1), the controller's brightness setting (2), general settings (6), and even specific SmartBox settings (8).

If a PIKO G-SmartBooster is integrated into the system, the triangles for scrolling appear next to the nine fields. You can then use the "down arrow" key to navigate to the booster menu.

3.8.1 Setting the language

Currently, nine languages are available, and their respective alphabets are used in their character sets.

To change the language, select the first field using the "1" key on the numeric keypad or by navigating to it and then pressing "OK".

You can use the "up" or "down" navigation buttons to scroll to the desired language and then select it with the "OK" button.

To exit the language menu, press the "back" button. The display now returns to the settings menu.

3.8.2 Setting the controller`s display brightness

The Controller's display brightness as well as the keyboard backlight brightness can be set separately from each other.

To do this, press key "2" on the numeric keypad in the settings menu, or navigate to this field and activate the menu with the "OK" button.

The following window contains the settings for the display (left) and for the keyboard backlight (right). You can switch between the two options using the "right" and "left" navigation buttons.
The value in the active field can be adjusted by turning the dial or using the "up" and "down" navigation keys.

The changes are executed directly and thus allow immediate control.
After the changes have been made, the "back button" will return you to the settings menu.

3.8.3 Setting the dial settings

The dial on the SmartController offers two types of speed settings and direction selection. These are referred to briefly as DC or AC speed regulator modes, since their modes of operation are based on the analog DC speed regulators commonly used in the past for direct current operation and the AC transformers used for alternating current operation (see chap. 3.3, "The locomotive menu").

To change these settings, press key 3 or use the navigation keys to highlight this field and activate the menu with the "OK" button.
The following window displays the settings for DC and AC (factory default), which can be selected using the navigation buttons and confirmed with the "OK" button (green field).

The next line defines the maximum "double-click time" for the throttle in milliseconds. If the dial is pressed twice (double-click) within this time (max. 999ms), an emergency stop command is sent to the active locomotive.

This window also contains the option "Last command takes precedence." This is a setting for operation with multiple controllers. If this function is enabled, multiple controllers can access the same locomotive address simultaneously, and the command that was sent most recently—regardless of which controller sent it—will always be executed.

Once you've made all the settings, go to the "Save" field and confirm by pressing the "OK" button. The "back" button takes you back to the settings menu.

3.8.4 SmartController sleep mode

If the throttle has not been used for some time during an operating session, it makes sense to go into sleep mode or shut down to conserve battery power. The time period between last use and activation of sleep mode or shutdown is adjustable. These options are set here.

To do this, press key "4" in the settings menu or navigate to this field and activate the menu with the "OK" button.

The following window displays the settings for screen and controller shutdown. Use the "down" and "up" navigation buttons to select the desired options.

Use the "right" and "left" navigation buttons to select a time setting in minutes and confirm it with the "OK" button.

If the "--" field is selected, this shutdown function will not be executed.

If the screen dims while the device is in use, you must first press any button on the controller to reactivate it before the next button press is processed.

If these settings are saved, pressing the "back" button will take you back to the settings menu.

3.8.5 Select WLAN network

NOTE: If the SmartController cannot connect to a WLAN network after being turned on (the WLAN symbol is crossed out), it will display a message asking if you want to use the "FastConnect" option. Select the "Yes" or "No" option.

The desired WLAN settings can be entered into the WLAN settings menu of the SmartController.

To do this, press key 5 in the settings menu or navigate to this field and activate the menu with the "OK" button.

Initially, the "Search" field is selected. After confirming with the "OK" button, the next window displays an option to choose whether to connect the controller directly to an available SmartBox via "FastConnect" (a quick connection) or to select a device from a list of available WLAN devices.

Here, you can choose "FastConnect" to connect to a powered-on SmartBox, or "List" to view available WLAN networks.

To select "FastConnect", highlight the field with the "OK" button. A message now appears saying "Transfer access data". Please wait for this to clear and then follow the instructions in the display.

Answer "Yes" to this prompt. If "No" is selected, use the "Left" navigation key to select "Yes," then press the "OK" button to confirm.

Press and hold the "II" button on the SmartBox until the "Run" and "Stop/ Fail" LEDs flash in-synch. Answer "Yes" to the query within approx. 30 seconds.

The connection is established when the two LEDs on the command station stop flashing and the active WLAN symbol appears on the display.

To select an available WLAN device, scroll to the "List" entry and confirm with the "OK" button. All accessible WLAN devices will now be displayed. The desired SmartBox will also appear in this list; select it using the "down" or "up" navigation buttons and confirm with "OK".

The selected WLAN device now appears on the display. To change the name of this WLAN device, press the "down" button; the active field will change from "Search" to the WLAN icon.

Confirm by pressing the "OK" button; the name field will now be highlighted in color, and you can change the name as desired using the phone keypad. Then confirm the name entry by pressing the "OK" button.

The line with the "WLAN / lock" symbol can be selected here to enter the WLAN password. Pressing the "OK" button opens the input field, which automatically enters a hyphen. If you want to exit this field without making any changes, first use the "left" navigation button to delete the hyphen, and then press the "back" button to exit the field. If, on the other hand, you want to set a password that is at least 8 characters long, first use the "left" navigation key to delete the hyphen; you can then enter the password using the phone keypad and confirm it by pressing the "OK" button. The factory password is "abcd1234".

Finally, click the "Save" button and then the "OK" button to save your entries, and the screen will return to the settings menu so you can select additional settings.

3.8.6 General settings (controller)

In the general settings menu, the throttle can be given a new name, you can set the WLAN transmission intensity, assign a new PIN to block various input and operating options and the Controller can be reset to the factory settings.

To do this, press button "6" on the keypad in the settings menu, or navigate to this field and activate the menu with the "OK" button.

By selecting the first field "Controller Name" the window changes to the name input field.

You can now change the name in this field as desired. To do so, press the "OK" button to activate the name field. Then enter the new name using the keypad.
Once you have entered the name in full and confirmed it by pressing the "OK" button, use the "Save" field to save the new name in the controller. The window will then return to the general settings.

In the submenu that follows, you can set the throttle's WLAN transmission power.

A range of values from 0 (low) to 10 (maximum) can be chosen here.

Select the menu to activate the input field by using the "OK" button and enter the desired value between 0 and 10 and then confirm it with "OK".

Finally, save this change via the "Save" field in the display.

The window then returns to the general setting options.

You can assign a four-digit PIN number to the SmartController to protect sensitive data input, or to limit the throttle's applications (a child safety lock). Select the "edit PIN" submenu to enter a PIN.

The factory-assigned PIN (0000) will be displayed on top of the solid red field while the new PIN is entered in the lower part of the solid red field. The new PIN is entered using the keypad and then confirmed with the "OK" button. Incorrect entries can be deleted using the "left" navigation key.
If you want to leave the menu without making any changes, the "back" button will take you back to the settings menu.

The last submenu allows you to reset the controller to its factory settings. To do this, you'll need the PIN you set earlier. The following **controller settings** will be reset to their factory defaults: WLAN password, controller name, drive controller mode, shutdown times, brightness levels, and the PIN; additionally, the "locked" menus will be unlocked.
To reset the controller to factory settings, navigate to the "Factory settings" submenu and confirm with the "OK" button.

Now enter your four-digit PIN and confirm with the "OK" button. Once the Controller is rebooted it is restored to factory settings.

3.8.7 The information menu

The Information menu allows you to view a wide range of information about the Controller, the track status and the SD-card.

It is accessed by pressing button "7" on the keypad (while in the settings menu) or by navigating to this field and selecting the menu with "OK".

Five submenus are displayed: "Track Monitor", "Firmware", "Imagedatabase", "Search Online" and "Serial Numbers".

The Trackmonitor: This menu displays the current status at the SmartBox's track output, including track voltage and operating temperature, as well as the current (left value) and the peak current during this session (right value).

The green portion of the "current bar" shows the current power relative to the maximum possible power. The red mark indicates the highest power during the current session.

Firmware: This section displays the current firmware version of the controller and the SmartBox, as well as the version currently available on the SD-card.

If the firmware version on the SD-card is more recent - that is, has a higher number - you can use the "Update" option to update the controller and/or the SmartBox. The latest firmware can be searched for and downloaded in "Station Mode" when an internet connection is available, or it can be downloaded from the PIKO Webshop and then saved to the SmartBox's SD-card.

The Imagedatabase: This displays the current version of the system's image database and the version currently available on the SD-card.

If the version on the SD-card is more recent - that is, has a higher number - you can update the image database by selecting "Import."

Search Online: To search online for newer firmware versions, the control panel's WLAN must be set to "Station Mode" (see settings menu 8, "SmartBox settings," -> WLAN settings).

If the online search is started without this setting, a message window will appear stating, "SmartBox not in StationMode."
If the online search is successful ("Updates are being downloaded"), the updates are saved to the SD-card, displayed in the "Firmware" menu, and can then be installed from there.

The Serial numbers: This submenu shows the serial numbers of the
PIKO G-SmartBox$_{wlan}$ (35050G) and the
PIKO G-SmartController$_{wlan}$ (35051).
This information is helpful for service purposes.

3.8.8 Settings menu of the SmartBox (command station)

To set parameters for the SmartBox, press button "8" while in the settings menu or navigate to this field and activate it with the "OK" button.

The first menu option deals with the general settings of the SmartBox. Highlight it and confirm your choice by pressing the "OK" button. This will take you to its submenu.

This section contains the settings for the main track output, the assignment of the three SmartBox buttons, SD-card usage, and - if the SmartBox is from a digital starter set (H0 only) - the option to enter an activation code to upgrade to the full version.

Track settings:
In this submenu, the first field allows you to set the maximum current output to the main track in 20 mA increments up to 5 A (value 250).

To do this, first use the "up" or "down" navigation keys to highlight the field and press the "OK" button. You can then enter the desired value using the numeric keypad. Any values above 250 are ignored. Incorrect entries cannot be deleted; they can only be overwritten.

In order to activate the CutOut feature (blank interval in the DCC signal) required for RailCom® applications, navigate to the "RailCom" line and confirm it with the "OK" button (green field). Pressing the "OK" button again switches the field off.

If RailCom Plus®-enabled vehicles are to register automatically, the "RailCom+ Registration" field must also be enabled - that is, it must be green.

Extended settings:
The "Extended settings" menu contains submenus for RailCom settings, decoder search via RailCom®, settings for the PIKO G-SmartBooster, and SmartBox voltage settings.

Decoder Search via RailCom Plus®:
If there are RailCom Plus®-capable vehicles on the layout that have not registered via RC+, they can be prompted to do so again. If the vehicle in question is equipped with a PIKO G-SmartDecoder 4.1, use the corresponding menu. If it has a PIKO XP decoder or a decoder from another manufacturer, use the “Search for RC+ Locomotive” menu.

RailCom Plus® settings:
Since the RailCom Plus® registration process must assign new decoder addresses when necessary (if the address of this decoder is already assigned in a locomotive data record), you can enter the address under "Address Offset" from which new addresses will be assigned in ascending order going forward.

If you want to overwrite existing locomotive data records that use a locomotive address- which are read in when registering a new locomotive via RailCom Plus®- select the "Overwrite address" checkbox here.

In the "Standard DCC" field, you can set the number of DCC speed steps (14, 28, 128) that the SmartBox assigns to a new locomotive without requiring an explicit setting in the locomotive data edit mode. Pressing the "OK" button scrolls through the options one entry at a time.

Once all settings have been made, go to the "Save" field and press the "OK" button to save the settings.

To exit the menu, press the "back" button.

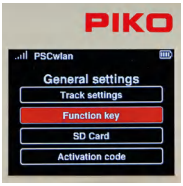
PIKO G-SmartBooster (PSB) settings:
If a short circuit occurs in the booster circuit, the booster can use a special command to ensure that all connected boosters and the SmartBox shut off their track outputs. To do this, the first entry must be activated accordingly.

If a vehicle crosses the track interfaces between a booster circuit and the SmartBox circuit, there should be no significant voltage difference between these two circuits; otherwise, compensating currents will flow between them. This voltage difference monitoring can be enabled in the booster menu.

Voltage settings:
Here, you can adjust the output voltage of the PIKO G-SmartBox using the "up / down" buttons in 2-volt increments from 16V to 22V.

As with the previous settings, the same applies here:
"Don't forget to save."

To return to the "General settings" menu, press the "back" button several times.



Key settings:
The specific function of the three SmartBox buttons can be configured in this menu.

You can choose between three functions for buttons I and II.

1. Main track on (send power to the main track)
2. FastConnect (quick connection with a SmartController)
3. No function

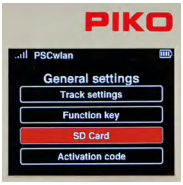
The "Stop" button has two options:

1. Power off (power to the main track must be switched on again using another button or a controller)
2. Power off / on (power to the main track can be switched off and on again using this button)

To set the desired function of a button, first navigate to the corresponding button and select it with the "OK" button.

Then, highlight the desired function for the button in the settings menu. Finally, confirm your choice with the "OK" button.

You may exit the menu using the "back" button.



SD-card settings:
This submenu lets you manage some of the SD-card's data.

Each field is used to specify which data should be saved or read, both for writing to the SD-card and for reading from the SD-card.

To do this, navigate to the desired field and activate it (solid green field) or deactivate it with the "OK" button.

Settings: This field deals with the SmartBox settings.

Locomotive: This field deals with all available locomotive data sets.

Accessory items: This field deals with all available records of accessory items.

Route: This field deals with all available data records of routes.

Use the "down arrow" button to write to the SD-card and the "up arrow" button to read from the SD-card; then press the "OK" button to perform the desired operation.
The yellow SD-card LED flashes while reading or writing.
You can then exit this menu by pressing the "back" button.

This completes the general setup options for the SmartBox; you can now use the "back" button to return to the SmartBox settings menu.

WLAN settings:

The next menu in the SmartBox settings lets you choose the desired WLAN settings for your SmartBox.

To get to this menu, select "WLAN settings" and confirm it with "OK".

This window displays the submenus for WLAN settings.

"Max. WLAN Transmission Power"
"Access Point Mode" (the SmartBox sets up its own WLAN network)
"Station Mode" (the SmartBox is integrated into an existing home WLAN network)

Just like the controller setting, the "max. WLAN signal transmission power" can be set here in a range from 0 (low) to 10 (maximum).
By finally saving via the "Save" field, the entered value is saved and you switch directly back to the WLAN settings menu.

To set up your own WLAN network, "Access Point Mode" must be enabled (factory setting). The necessary settings can be entered in the submenu of the same name, which can be selected by highlighting it and then pressing the "OK" button.

By highlighting the "AccessPoint-Mode" field and then pressing the "OK" button, the corresponding field can be activated (green field) or deactivated.

The next line lets you enter or change the name of this WLAN network by using the keypad method you are already familiar with.

You can select the line with the "WLAN / lock" icon here to enter the WLAN password. Pressing the "OK" button opens the input field, which automatically enters a hyphen. If you want to exit this input field without making any changes, first use the "left" navigation key to delete the hyphen, and only then use the "back" key to exit the field. If, on the other hand, you want to set a password that is at least 8 characters long, first use the "left" navigation key to delete the hyphen; you can then enter the password using the phone keypad and confirm it by pressing the "OK" button.
The factory-set password is "abcd1234".

Once all required entries have been made, they are saved by selecting the "Save" symbol and entering the four-digit PIN followed by the "OK" button.

If you want to integrate the SmartBox into an existing home WLAN network - for example, to check for updates online - you must enable "Station Mode." Select this option in the WLAN settings menu and confirm it with the "OK" button.

In the following window, the required entries can be made using the same procedure as "AccessPoint mode", where the name of the desired WLAN network and its password must be entered here.

If these settings were saved using the "Save" icon and the SmartBox was then restarted, it will be connected to the specified WLAN network.
You can exit this menu by pressing the "back" button.

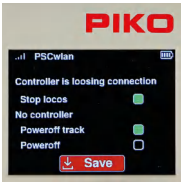
System response to a lost connection:

In the next menu of the SmartBox settings, you can configure the desired behavior of the SmartBox in the event that a controller loses its connection to the hub, or - in multiplayer mode - the last controller loses its connection to the hub.

To access this menu, navigate to the "Behavior if the connection is lost" field and select it with the "OK" button.

To configure the settings, use the "up" or "down" navigation buttons to select the desired field and press the "OK" button to enable (green field) or disable it.

If a throttle loses its connection during train operation and the field in the "Stop locomotives" line is activated (solid green field), all trains on the layout are stopped. If this selection was not made and there is another throttle connected to the command station, then nothing will happen.



The following settings allow you to specify whether only the track should be turned off or whether the SmartBox (track and WLAN) should be turned off when the last controller loses its connection to the control center. In the second case, the SmartBox can be reactivated using its I button. If neither option is selected here, everything remains in operation even if no controller is connected to the control center (useful for display window layouts, for example).

Once the desired entries have been made, select the "Save" icon to save them, and then use the "back" button to exit the menu.

Pressing the "back" button again returns you to the main menu.

3.8.9 Limiting access to individual controller menus (child safety lock)

To protect individual sections of the controller from unauthorized use, they can be locked so that they can only be activated by entering a four-digit PIN.

To do this, press the "9" key on the numeric keypad in the settings menu, or navigate to this field and press the "OK" button to activate the menu.

In the following display, you can use the navigation buttons to select the areas you want to lock and then press the "OK" button to lock or unlock them.

A small lock icon will now appear in the respective field.

Once all areas to be locked have been selected, exit this window by pressing the "back" button, then entering the four-digit PIN, and finally pressing the "OK" button.

In the main menu, the locked areas are now displayed with the small lock symbol.

If a locked area is selected while the system is running, the PIN must be entered to access that area once and confirmed by pressing the "OK" button. This menu is now accessible until you exit it. To access it again, you must re-enter the PIN.

4. RailCom Plus®

Since the **PIKO G-SmartControl**$_{wlan}$ is WLAN RailCom Plus®-compatible, vehicles equipped with a compatible decoder can automatically register their name, special function symbols, and locomotive images the first time they are placed on the track. This means you do not need to create them via the editing menu. Depending on the vehicle project and decoder type used, an original PIKO vehicle image, the RailCom® symbol for the vehicle class stored in the decoder, or the RailCom® question mark will be loaded and displayed. Any image from the PIKO image database can also be added later in edit mode.

If the address stored in the decoder is already assigned in the system, a message will appear stating, "Locomotive address already assigned. New address." The **PIKO G-SmartControl**$_{wlan}$ automatically assigns a new decoder address, which is also programmed directly into the decoder. The value (Address Offset) at which these new addresses are assigned (factory setting 1000) can be set in the settings menu (see Section 3.8.8 "SmartBox (Control Center) Settings menu – Track settings").
In this menu, "RailCom®" and "RailCom Plus®" can be enabled or disabled.
If a RailCom Plus®-capable vehicle has not registered automatically, please refer to the section "Decoder Search via RailCom Plus®" in Chapter 3.8.8.

5. Firmware update

To ensure you always enjoy the best possible gaming experience, we recommend that you update your devices regularly. If the PIKO G-SmartBox$_{wlan}$ is connected to your home network (Station Mode), you can perform the device updates directly (see the user manual, chapter "The Information Menu"). Alternatively, you can find these updates in the PIKO Webshop under "Important Links" -> "Info SmartControlwlan" to download them to your SD-card.

6. Technical data

a. PIKO G-SmartBox$_{wlan}$ (Command station 35050)

- Voltage supply: plug-in power supply - input: 100-240 V 50 Hz, output: DC 22 V / 5 A
- Max. current rating for main track output: 5 A
- Max. current rating for programming track output: 400 mA
- WLAN: 2.4 GHz – 2.483 GHz band, maximum transmit power: 100 mW
- Dimensions: 161 × 96 × 38 mm - 6.3” × 3.8” × 1.5”

b. PIKO G-SmartController$_{wlan}$ (handheld throttle 35051)

- High-resolution TFT display with a size of 40 x 30 mm - (1.6”x1.2”) TFT display
- WLAN: 2.4 GHz – 2.483 GHz band, maximum transmit power: 100 mW
- Battery: Lithium-ion 3.7V / 1400mAh
- Dimensions: 189 × 79 × 37 mm - 7.4” × 3.1” × 1.5”

EU Declaration of Conformity

PIKO Spielwaren GmbH hereby declares that this product complies with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: https://www.piko.de/konformant

FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

FCC Radiation Exposure Statement 35051 **PIKO G-SmartController**$_{wlan}$ (2ATRN-55823)

The equipment has been evaluated to meet general RF exposure requirement. The device can be used in portable condition without restriction.

FCC Radiation Exposure Statement **PIKO G-SmartBox**$_{wlan}$ (2ATRN-35050)

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

7. Product safety warnings

- Before use, read and follow the safety instructions and user manual carefully.
- Always handle your **PIKO G-SmartControl**$_{wlan}$ with care! The device contains sensitive electronics, so avoid subjecting it to strong vibrations.
- These devices are not toys and are not suitable for children under 14 years of age! However, they may be operated by children under the expert supervision of an adult.
- Never plug the track power cord into an electrical outlet!
- Regularly inspect the power supply unit for damage to cables, plugs, the housing, etc. Do not use the power supply unit if it is damaged!
- If there are irregularities in the power supply, the track voltage will be shut off for safety reasons. You can resume previously activated operation by pressing the "STOP" button.
- Connect only accessories that are intended for use with this device.
- Do not put the **PIKO G-SmartControl**$_{wlan}$ system into operation until you are absolutely certain that there are no short circuits or wiring errors.
- Protect the device from dust or similar contaminants, and clean it regularly.
- Protect the device from water and moisture.
- Tampering with the hardware or software will void the warranty.
- Keep this manual in a safe place.

8. FAQs

At this point we would like to refer you to the FAQ page on our website. You can find it in the PIKO web shop at www.piko-shop.de/?a=faq. There you will find the latest information on using the **PIKO G-SmartControl**$_{wlan}$ system as well as detailed video tutorials. If you get stuck, you will also find a contact form at the bottom of the website.

9. Technical hotline

For technical questions about PIKO products, please contact our technical hotline at

+49 3675 8972 55

Tuesdays from 4 to 6 p.m. (German time)

Thursdays from 4 to 6 p.m. (German time)

You can also send us a fax at +49 3675 8972 50
or send us an email at hotline@piko.de.

Or write us a letter:

PIKO Spielwaren GmbH
Lutherstraße 30
96515 Sonneberg
Germany

NOTES:

NOTES:

PIKO model trains –

for every layout!

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