

PIKO
SMARTCONTROL
light

PIKO SmartControl_{light} –
the digital future of
model railway control!



INSTRUCTION MANUAL



PIKO SmartControl_{light} System

Instruction manual

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PIKO SmartControl_{light} is a digital control system for aspiring model railway beginners and experts. It consists of the hand controller **PIKO SmartController_{light}** and the digital central station **PIKO SmartBox_{light}** which are connected via the enclosed spiral cable.

With **PIKO SmartControl_{light}** you can control DCC locomotives (Digital Command Control is the most popular data format for the digital control of DC model railways, signals and turnouts), switch magnetic accessories (e.g. turnouts) and activate routes. It masters everything the model railway enthusiast needs for a comfortable operation of digital model railways.

The **PIKO SmartController_{light}** is the intelligent hand controller for the **PIKO SmartControl_{light}** system. By using a PIKO Lok-Net converter it can also be used as an additional corded hand controller for the **PIKO SmartControl** system or other digital central stations with LocoNet®.

1. PIKO SmartControl_{light} basics

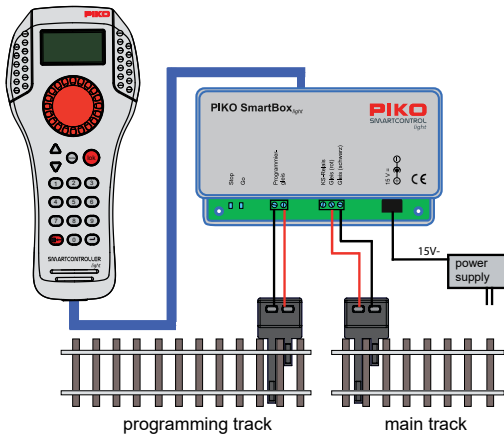
The digital central station **PIKO SmartBox_{light}** is the heart of the **PIKO SmartControl_{light}** system. It coordinates and processes all commands according to their relative importance. It generates the DCC track signal and establishes the connection to the hand controller. With the **PIKO SmartController_{light}** you can control the PIKO digital central station. You can control locomotives, switch magnetic accessories and activate routes of the digital central station. It is connected to the LocoNet®-T port of the digital central station via the enclosed spiral cable.

1.1.Features

- With the PIKO digital central station you can individually and simultaneously control up to 20 locomotives.
- The digital central station supports the DCC data format with 14, 28, und 128 speed steps.
- You can individually set the data format for 9.999 locomotive addresses.
- You can control up to 24 special functions for each locomotive address.
- With the digital central station from PIKO you can control up to 2.048 magnetic accessories with DCC data format, for example turnouts and signals.
- The states of the magnetic accessory addresses 1-1.024 are permanently saved, so that they are displayed correctly after a reboot of the system.
- The **PIKO SmartController_{light}** can memorize up to 16 different routes (each route can include numerous switching sequences)
- Every route can switch between the magnetic accessory no. 1 to 2.048 in up to 10 steps.
- The output of the main track of the digital station supplies a current of 2 A and is protected against short circuits and overheating. This allows the simultaneous operation of up to 4 trains (depending on the used scale) without having to use any additional boosters.
- The digital central station is equipped with an extra output for a programming track with a maximum current of 250 mA. During programming the output of the main track is switched off
- With the PIKO digital central station you can program DCC decoder as well as programmable LocoNet® devices.
- The station also has a special output for a turning loop relay.
- The PIKO digital central station is equipped with two LocoNet® ports at the back.

1.2. Ports

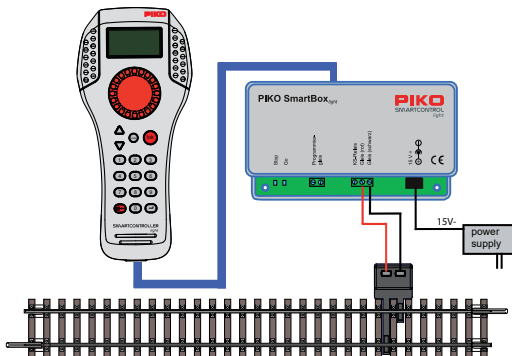
The PIKO digital central station is equipped with ports for a main track, a programming track, a turning loop relay and further Loco-Net® devices as well as a port for the power supply.



The programming track serves only for the programming of DCC decoders. During operation it is currentless and a connection to the main track is not allowed.

2. First steps with the PIKO SmartControl_{light}

At first, please connect all components according to the following graphic.



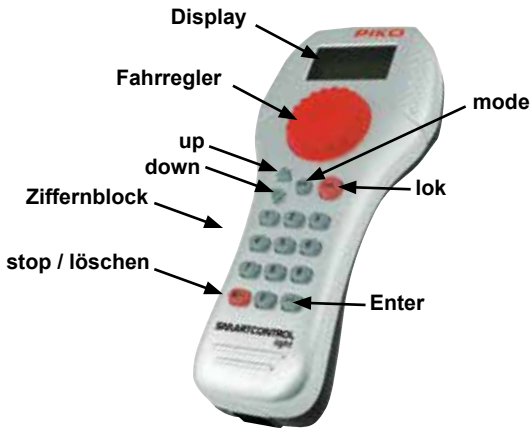
Now, please turn on the operating voltage by plugging the power supply into the power outlet. A switchable multisocket outlet can be beneficial.

The green control LED should now be turned on and the **PIKO SmartController_{light}** should display the locomotive mode.

If you purchased the **PIKO SmartControl_{light}** as part of a **PIKO SmartControl_{light}** starter sets, you can directly start playing due to the plug and play character of the sets. All traction units of the starter sets are already incorporated into the **PIKO SmartController_{light}**.

3. The control elements of the PIKO SmartController_{light}

Overview



Display

Clearly structured high definition display that shows the symbol of the current operating mode and the locomotive or base address at the top of the display. In the middle it shows basic information about the currently controlled locomotive and at the bottom you can find information about the switching functions, depending on the chosen mode.



The display clearly shows all the information about the locomotive, the speed, the driving direction and the state of the locomotive's special functions or of the currently chosen operating mode (e. g. position of the switches in the turnout mode).

Speed regulator

The hand controller is equipped with a rotary encoder wheel to control the speed, the driving direction, the emergency stop of the locomotive and to choose the locomotive's data set as well as the symbols and their position in the name of the locomotive.

The following part describes the different keys of the controller:

up / down (▲) / (▼)

- In **loco mode**, changing of the special function blocks light, F1 - F8; light, F9 - F16; light, F17 - F24; light - F32.767 (activate in configuration mode)
- In **turnouts mode**, changing of the base address +8 or -8
- In **routes mode**, changing of the base address +8 or -8
- In **configuration mode**, changing of parameters

mode

- Selection of the operating mode: [1] = loco mode, [2] = turnouts mode, [3] = routes mode, [4] = programming mode, [5] = change loco data, [6] = configuration mode

lok

- Initiate loco selection or switch back to loco mode from every other mode

keypad

- Number keys [0] - [9], enter loco address, switch into different modes, selection of the operating mode and sub-menus

stop / delete

- Turn DC voltage on and off, delete last entered number or loco data set

Enter [↵]

- Confirm an input
- Confirm a loco data set in mode "change loco data"
- Initiate input of an address and confirm in loco mode, turnouts mode and routes mode
- Start a reading or programming process in programming mode

4. Operating the PIKO SmartController_{light}

4.1. Loco mode

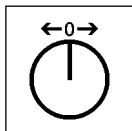
The display shows the symbol, the name, the address, the speed and the driving direction of the currently controlled locomotive.



The lighting and up to 8 special functions can directly be controlled via the numeric keypad. While operating in DCC mode, 32.768 special functions can be activated for each loco address. All locomotives can be controlled with the large rotary encoder wheel. When switching to another locomotive, the intelligent controller without an end stop automatically takes over the speed of the new locomotive. You can switch between DC and AC driving mode.

4.2. DC driving mode

The DC mode recreates the control of a locomotive on an analog two-wired DC system.

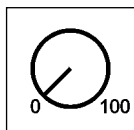


Operating principle of the DC driving mode

While operating in the DC driving mode, you can increase the speed in one direction, by turning the encoder wheel to the right, starting at a speed of zero. If you turn the wheel to the left the speed decreases until your train comes to a halt. If you keep turning the wheel of the **PIKO SmartController_{light}** to the left, the loco will start to accelerate into the other opposite direction. If the top speed is reached, further turning of the wheel has no effect. While in this operating mode, a gentle press on the wheel will stop the vehicle immediately.

4.3. AC driving mode

The AC driving mode recreates the control of a locomotive on an analog three-wired AC system. While operating in the AC mode, you can increase the speed by turning the encoder wheel to the right and decrease it by turning it to the left. If the top speed or a speed of zero is reached, further turning of the wheel has no effect. To switch the driving direction, you have to gently press down on the encoder wheel of the **PIKO SmartController_{light}**. If you press on the wheel while the train is moving, the locomotive stops immediately. After the emergency stop you can then change the driving direction.



Operating principle of the AC driving mode

4.4. Turnouts mode

With the **PIKO SmartControl_{light}** system you can control up to 2.048 DCC magnetic accessories. With the numeric key pad of the **PIKO SmartController_{light}**, you can directly control groups of 8 magnetic accessories. The display shows you the current turnout position with the symbol of a switch (factory setting) or with one of 27 symbols of your choice.

4.5. Turnout lists

With the **PIKO SmartController_{light}** you can create up to 4 turnout lists, each with up to 8 turnout addresses. Within these lists, the order of addresses is variable. You can also assign symbols and names with two characters for every magnetic accessory.

4.6. Routes mode

If there are routes saved on the **PIKO SmartController_{light}**, you can activate them with the routes mode of your controller. You find further information about this topic in chapter 7.

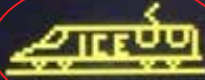
4.7. Change loco data mode

You can create your own loco datasets in the loco database of the **PIKO SmartController_{light}**. Here you can assign loco symbols, addresses, names and symbols for special functions. You can choose between over 60 loco symbols and over 160 symbols for special functions. You can choose a specific locomotive of a digital system with its respective loco address. The address is a sequence of numbers, that marks the decoder of a locomotive. To illustrate the operating principle of the loco database, we give you an example of a locomotive with the address "1234" on the following pictures.

```
1= LOCOADDR: 1234
2= LOCOSYM.:
3= LOCONAME:

4= CHANGE FUNC.ICON
5= DATAF. :   DCC 28
```

To simplify the selection of a locomotive, you can assign a symbol (in our example the symbol of an ICE railcar) and a name (in our example "PIKO ICE Test") to each loco address. Once assigned, this data set is saved on the **PIKO SmartController_{light}**. For every new selection of a locomotive, you can choose the loco by its name on the list.

```
1= LOCOADDR: 1234
2= LOCOSYM.: 
3= LOCONAME: PIKO ICE TEST
4= CHANGE FUNC.ICON
5= DATAF. :   DCC 28
```

We show you how to create loco datasets in chapter 9.1 "change loco data".

If you want to control a vehicle with the **PIKO SmartController_{light}**, you have to select it by its decoder address or the assigned name.




While in loco mode, you can start the selection of a locomotive by pressing on [lok] or [↔]. By turning the encoder wheel, you can select a locomotive out of the loco database (if there are any available datasets). When you found the desired locomotive, you can select it by again pressing [lok] or [↔].



If the desired loco cannot be found on the list, you can enter a loco address with the keypad. The [stop/delete] key deletes the lastly entered number and the [lok] and [↵] key confirms the input.



Addresses of the vehicles included in the **PIKO SmartControl_{light}** starter sets

traction vehicle	adress	symbol	function F0	function F6
electric loco	4		light on/off	shunting mode
diesel loco	5		light on/off	shunting mode
multiple units	6		light on/off	shunting mode

4.8. PIKO SmartController_{light} „Lock“ (button lock)

The functions of the **PIKO SmartController_{light}** can be limited to the operation of a locomotive and the on and off-turning of the track current. All other functions as well as the [lok] key are deactivated in this state.

Controller lock (key lock): [mode] key and [0] key, keypad locked; [mode] key and [0] key, keypad unlocked.

4.9. Help function

The situational help function offers you automatic help in the current operational situation. If you do not need that help anymore, you can simply turn the help function off.

4.10. LocoNet®

The LocoNet® port turns the **PIKO SmartController_{light}** into a permanent companion around your model railway system. You can separate it from the LocoNet® at any time and plug it back it at another place. The displayed information will be updated automatically.

4.11. Permanent memory

Once entered, all configurations of the **PIKO SmartController_{light}** are permanently saved on the device, even when the device is no longer activated.

5. Menu operation

Every mode of the **PIKO SmartController_{light}** has sub-menus for the basic settings of the devices and the control of your model railway.

These menus of the **PIKO SmartController_{light}** can be reached by pressing the [mode] key.

The [mode] key switches between operating modes. By pressing it, the main menu will show all operating modes. They are numbered 1 to 6 and can be activated by pressing the respective number key on the keypad.

5.1. Input of numbers

The input of numbers, for example to enter a loco or base address, is done via the keypad. As soon as you press a number key, you can complete the input and confirm it by pressing the [↔] key. With the [stop/delete] key you can delete the last entered number.

5.2. Configuration

The configurations of the **PIKO SmartController_{light}** can be changed in a simple menu and are permanently saved on the device.

The menu for the configurations can be reached by pressing the [mode] key and then selecting the menu point "configuration" by pressing [6].

Here you can use the keys [▲] or [▼] to scroll between **two pages** of possible configurations.

Page 1 of the configuration menu includes the following points:

- 1 = language
- 2 = brightness
- 3 = help
- 4 = throttle
- 5 = switch-off time

Page 2 of the configuration menu includes the following points:

- 1 = loco-warnings
- 2 = 32.000 functions
- 3 = routes
- 4 = turnout configuration

5.2.1. Menu point “language“

By pressing [1] on **page 1** of the configuration menu you can retrieve the language settings. The desired language can be selected with the [▲] and [▼] keys and has to be confirmed by pressing on [↵].

You can choose between the following languages:

- German (default setting)
- Danish
- English
- French
- Italian
- Dutch
- Polish
- Swedish
- Spanish

5.2.2. Menu point „brightness“

By pressing [2] on **page 1** of the configuration menu you can set the brightness of the display. You can choose between 15 brightness levels. The brightness can be selected with the [▲] and [▼] keys. The brightness of the value number on the display shows the actual brightness level that will be set. The level has to be confirmed by pressing on the [↵] key.

5.2.3. Menu point “help“

By pressing on [3] on **page 1** of the configuration menu you can reach the help function. When switched on, small helping windows will appear for every step in the “configurations” and “change loco data” modes. You can turn the help function on and off with the [▲] and [▼] key. To confirm your selection press [↵].

5.2.4. Menu point “throttle“

With the **PIKO SmartController_{light}** you can switch between a DC and an AC driving mode (s. point 4.2 and 4.3). The device is factory-set in DC driving mode.

By pressing [4] on **page 1** of the configuration menu you get to the menu point “throttle”. With the [▲] - and [▼] -keys you can switch between the two modes. To confirm your selection press [↵]. For more information, please see chapter 5.6 “loco mode”.

5.2.5. Menu point „switch-off time“

To preserve the display of the **PIKO SmartController_{light}** it automatically turns dark after a preset amount of time.

To reactivate the display, press the [lok] -key.

By pressing [5] on **page 1** of the configuration menu, you can set the switch-off time of the **PIKO SmartController_{light}**. The switch-off time can be set with the [▲] - and [▼] keys in steps of 8 seconds. The maximum switch-off time is 248 seconds. If the switch-off time is set to 0, the display will not turn off during operation. To confirm your selection press [↔].

5.3. Menu point “loco-warnings“

If more than one **PIKO SmartController_{light}** is used and loco-warning is turned on, you can see whether a locomotive is already controlled by a different **PIKO SmartController_{light}** with activated loco-warning by selecting the locos address. For this process every **PIKO SmartController_{light}** has its own ID number, which is not visible in the system.

There are four settings for this operational situation:

- 0 = No loco-warning
- 1 = loco-warning “LOCOMOTIVE ALREADY UNDER CONTROL“. The **PIKO SmartController_{light}** connects its ID with the loco address and is able to control it.
- 2 = loco-warning “LOCOMOTIVE ALREADY UNDER CONTROL“. The **PIKO SmartController_{light}** does not connect its ID with the loco address and is able to control it.
- 3 = loco-warning “LOCOMOTIVE NOT CONTROLLABLE“. The loco address cannot be accepted and controlled. The display shows “LOCO?“. Another loco address can now be selected.

By pressing [1] on **page 2** of the configuration menu, you can set the loco -warning of the **PIKO SmartController_{light}**. By pressing [▲] or [▼] you can switch between the different settings and confirm it by pressing [↔].

ATTENTION: If loco-warning 1 is switched on and a loco address is quitted, the connection to this loco address will be deleted.

*ATTENTION: If loco warning 1 is switched on and the **PIKO SmartController_{light}** quits the system, the last activated loco address has to be reactivated by another **PIKO SmartController_{light}** with loco warning 1 or at the digital central so that the connection is deleted.*

*ATTENTION: Please note that only the **PIKO SmartController_{light}** can transfer this ID. That's why loco warning is only available for **PIKO SmartController_{light}**. Other controllers do not support loco warning.*

5.4. Menu point „routes“

The **PIKO SmartController_{light}** can memorize up to 16 routes.

By pressing [3] on **page 2** of the configuration menu, you reach the routes menu.

Here you can enter switching sequences for the routes. They will be automatically saved on the **PIKO SmartController_{light}**.

By pressing [1] you can enter the number of the route (1 - 16) you want to change. The number has to be entered with the number keys and confirmed with the [↔] -key.

By pressing [2] you can enter the individual steps (1 - 10) of the route. The steps have to be entered with the number keys and confirmed with the [↔] -key.

By pressing [3] you can enter the addresses for the magnetic accessories assigned to the steps 1-10. The addresses have to be entered with the number keys and confirmed with the [↔] -key.

After pressing [4] you can use the [▲] - and [▼] – keys to choose the switch direction “red” or “green” for the respective address of the magnetic accessory. Afterwards you have to confirm your choice with the [↔] -key.

By pressing [0] you can leave the routes menu. All entered routes are automatically memorized.

5.5. Menu point “turnout configuration “

By pressing [4] on **page 2** of the configuration menu, you reach the “turnout configuration” menu.

Here you can assign symbols to your turnout addresses.

You can create up to four turnout lists, in which you can save up to eight turnout addresses in random order. Besides the symbols you can also assign two-digit descriptions to these addresses.

After pressing [1] in the turnout configuration menu you can use the [▲] and [▼] keys to switch between “ALL” (the **PIKO SmartController_{light}** now uses all turnout addresses (1 – 2.000) in ascending order) or “LIST” (the **PIKO SmartController_{light}** now uses the four turnout lists with up to eight turnout addresses).

Confirm your selection with the [↔] key.

By pressing [2] (only when “LIST” is activated) you can define the position (1 - 32) of the turnout addresses within the four turnout lists using the number keys. Confirm your selection with the [↔] key.

By pressing [3] you can choose the turnout address you want to configure. You enter the address by using the number keys and confirming it with the [↔] key.

By pressing [4] (only when “LIST” is activated) you can assign a two-digit description to the address.

You can change the position of the cursor by turning the encoder wheel.

Afterwards press the encoder wheel down for confirmation.

Now you can choose the first digit by again turning the encoder wheel.

Press the encoder wheel again to confirm your choice. Repeat the steps for the second digit.

When both digits are selected, confirm your choice by pressing [↔].

By pressing [5] you can assign a symbol to the turnout address. Use the [▲] and [▼] keys to choose a symbol from the list and confirm your choice with the [↔] key.

By pressing [0] you can leave the turnout configuration menu.

ATTENTION: You can assign different symbols to the addresses in the “ALL” and “LIST” mode.

5.6. The loco mode

In loco mode you can activate and control locomotives. You can activate loco mode from every menu by pressing the [lok] key.

The control of the speed and driving direction of every loco also works while being in the turnout or routes mode.

5.7. Light- and special functions

You can activate light and special functions F0 to F24 of loco and function decoders by using the number keys of the **PIKO SmartController_{light}**.

The [0] key always controls light functions (F0).

In the basic position, the keys [1] to [8] control special functions F1 to F8.

By pressing [▲] once, the number keys [1] to [8] will control the functions F9 to F16.

By pressing [▲] again, you can control the functions F17 to F24.

By pressing [▲] a third time, the number keys will control functions F1 - F8 again.

The [▼] key will set back the selection of the special functions one step.

The displayed symbols show the respective function numbers and the current state of the special functions so you can see which functions are turned on or off. You can assign the symbols in the respective loco data set. If you choose a locomotive by its loco address that is not yet saved as a loco data set, the special functions will be displayed with standardized symbols.

Control of special functions higher than F24

If your digital central station (**PIKO SmartBox** and **PIKO SmartBox_{light}**) can control more than 24 special functions in DCC format and you activated this function in the configuration menu of your **PIKO SmartController_{light}**, you can reach a fourth level of special functions with the [▲] and [▼] keys. There you can enter the number of the special function (0 – 32.767) with the number keys and confirm it by pressing [↵]. You can delete the last entered digit by pressing the [stop/delete] key. You activate this function by pressing [1] and deactivate it by pressing [0]. The current state of the function cannot be displayed.

5.8. Double traction

If you want to couple two locomotives, for example to pull a heavy train, they have to synchronously receive the same operating commands. The **PIKO SmartController_{light}** merges the two loco addresses into one double traction, so that both can be controlled by one controller.

If you successively press [lok] and [▲] while in loco mode, you can couple a traction locomotive to the currently controlled locomotive (basic locomotive). This traction

locomotive can then be retrieved by its loco address or via the encoder wheel in the loco data base.

After confirming the selection with the [↵] key, a "D" (for double traction) will be displayed in front of the address of the basic locomotive. When the traction locomotive is selected, a "S" (slave) will be displayed in front of its address. The special functions of the traction locomotive can be controlled independent of the basic locomotive. The speed and the driving direction of the traction locomotive can not be changed.

When controlling the basic locomotive, the traction can be deactivated by pressing [lok] and [▼].

5.9. Select last loco

The **PIKO SmartControl_{light}** system memorizes the last selected locomotive address. If you want to switch between the currently and the last used locomotive, for example for comfortable shunting, you do not have to insert the address again or select the locomotive out of the loco database. Just consecutively press [lok] and [mode] to switch back to the last controlled locomotive.

6. Turnout mode

With the **PIKO SmartController_{light}** you can control up to 2.048 DCC magnetic accessories. Groups of 8 turnout addresses can be directly reached with the numeric keypad. The current switching position is indicated on the display by the respective symbol.

While in turnout mode the name of the locomotive is visible and you can still control the speed and direction with the encoder wheel. This makes for a lot of fun during shunting manoeuvres on turnout streets.

6.1. Select turnout mode

To select the turnout mode, press [mode] and then [2].

Now you can control up to eight turnout addresses with the keys [1] to [8].

6.2. Control magnetic accessories

The number keys [1] to [8] control turnout addresses. Every operation of the keys switches the function of the turnout e.g. the position of the switch from straight to turning.

If "ALL" is activated in the turnout configuration, [1] switches the turnout of which the address is currently displayed on the **PIKO SmartController_{light}** screen. The keys [2] to [8] switch the turnouts with the subsequent addresses. If the basis address is 1, the eight number keys switch the turnout addresses 1 to 8. If the basis address is for example 47, the eight number keys switch the turnout addresses 47 to 54.

By pressing the [←] key, a new basis address can be entered via the number keypad. The [stop/delete] key deletes the last entered digit. By pressing [↵] the entered basis address can be confirmed.

The [▲] and [▼] keys change the current basis address by +8 or -8.

In the factory settings every turnout is displayed by a turnout symbol at the bottom of the screen. The turnout position on the screen shows the current direction of the turnouts (turning=red; straight=green). If there are symbols assigned to the turnout addresses in the turnout configuration, they accordingly display the turnout position.

If "LIST" is activated in the turnout configuration, the keys [1] to [8] switch the turnout addresses, which are listed on the four turnout lists. With the [▲] and [▼] keys you can scroll between the four turnout lists. The address field displays the currently used turnout list (1-4).

7. Routes mode

The **PIKO SmartController_{light}** can control up to 16 routes.

Groups of up to 8 routes can directly be reached via the number keys. An active route is displayed by the turnout symbol with switching turnout position on the screen.

While in routes mode, the name of the locomotive is visible and you can still control the speed and direction of the locomotive with the encoder wheel.

7.1. Select routes mode

To select the routes mode, press [mode] and then [3].

Now you can activate routes by using the number keys [1] to [8].

7.2. Activate routes

The keys [1] to [8] of the number key pad activate the routes. The key [1] activates the route of which the basis address is displayed in the address field on the screen. The keys [2] to [8] activate the routes with the subsequent addresses. If the basis address is 1, the eight number keys activate the routes 1 to 8. If the basis address is 9, the eight number keys activate the routes 9 to 16.

With the **PIKO SmartController_{light}** you can use the [▲] and [▼] keys to switch between the two blocks of eight addresses or random addresses between 1 and 73. To do that, press [↔] so you can enter a new basis address with the number keys. The [stop/delete] key deletes the last entered digit. The [↔] key confirms the entered basis address.

With the [▲] and [▼] keys you can change the current basis address by +8 or -8.

To learn more about how to create routes or commands please read chapter 5.4. about the menu point "routes mode".

8. The programming mode (PIKO SmartController_{light})

In programming mode, you can configure DCC locomotives, function decoders or LocoNet[®] components.

8.1. Select programming process

By pressing [mode] and then [4] you can select the programming mode.

Now you can use the keys [1] to [4] to select the desired programming process.

1 = LOCOADDRESS - PG. (Read and program loco address)

2 = CV - PROG. TRACK (CV programming on the programming track)

3 = CV – MAIN TRACK (CV programming on the main track)

A CV (Configuration Variable) is there to change the configuration of a decoder, for example, you can change the loco address with CV1. If you assign the value 5 to this CV, the loco can be controlled under the loco address 5.

8.2. Read/program loco (decoder) address

If a locomotive with a DCC decoder is on the programming track and the menu point „LOCOADDRESS - PG.“ is selected, you can select and program the loco address.

By pressing [1], the current loco address can be selected.

After a few seconds the selected loco address will be displayed behind "LOCOADDR.."

To leave the programming menu, press [lok]. The loco address can now be controlled with the encoder wheel.

At first, press [3] to program a new loco address. Now you can enter a desired address between 1 and 9.999 and confirm it by pressing [↔]. To continue with the programming process, press [2].

After a few seconds, the result of the programming process will be displayed at the bottom of the screen.

„PROG: OK “ – programming successful

„PROG: ERROR “ – programming failed

„PROG: NO LOCO“ – no loco on the programming track

„PROG: SHORT “ – short circuit of the loco or on the programming track

By pressing the [lok] or [mode] key you can leave the programming menu.

8.3. CV programming on the programming track

If there is a programmable DCC loco on the programming track and the menu point „CV - PROG. TRACK“ is selected, you can select and program all CVs between 1 and 1.024. Please refer to your decoder instruction for more information about the respective CVs and their range of values.

After pressing [1], the number of the desired CV can be entered and confirmed with the [↔] key. The current value of the CV will now be read and displayed after “2= VAL.:”.

Now press [2] and enter the desired value for this CV. Confirm your input with the [↔] key. The programming will be executed automatically.

The result of the programming process will be displayed in the bottom line after a few seconds.

„ PROG: OK “ - programming successful

„ PROG: ERROR “ - programming failed

„ PROG: NO LOCO “ - no loco on the programming track

„ PROG: SHORT “ - short circuit of the loco or on the programming track

By pressing the [lok] or [mode] key you can leave the programming menu.

PLEASE NOTE: To test whether or not your programming was successful, you should put your loco on the main track. The port of the programming track is currentless during normal digital operation.

8.4. CV programming on the main track (POM)

If you want to program a loco’s CV, the loco has to be placed on the main track. All other vehicles can remain on the main track. This way you can make necessary modifications to the start-up and braking behaviours of your vehicles during normal operation of your railway system.

While being in the menu „CV – MAIN TRACK“, you can program all CVs between 1 and 1.024.

The loco address cannot be programmed on the main track. For more information, please read the instruction manual of your loco decoder.

After pressing [1] you can enter the address of the loco you want to program. Confirm your input by pressing [↔].

Now press [2] and enter your CV number. Again, confirm by pressing [↔].

Now press [3] and enter the desired value for your CV. Again, confirm by pressing [↔].

The bottom line on the display will show „POM SENT“. That means your programming was successful.

CVs cannot be read out on the main track. If you want to check, whether a programming process on the main track was successful, you have to try out the programmed CV.

By pressing the [lok] or [mode] key you can leave the programming menu.

9. „Change loco data“ mode

When the “change loco data” mode is selected, the **PIKO SmartController_{light}** will at first show a small help window, which explains the most important keys for this menu.

With the next selection of a key, the help window will disappear again.

If no help is needed, you can deactivate this function in the configuration menu (see chapter 5.2.3).

9.1. Change loco data

By pressing [mode] and then [5] the mode “change loco data” is selected.

With the keys [1] to [5] you can select what you want to change.

First, you have to enter the loco address which you want to change by pressing [1] and then use the number keys to enter the address. Confirm the address with the [↔] key.

By pressing [2] you can change the loco symbol. The symbol can be selected out of a list by using the [▲] and [▼] keys and has to be confirmed with the [↵].

By pressing [3] you can change the loco name.

- The position of the cursor can be changed by turning the encoder wheel.
- Then, please press down the encoder wheel.
- Now you can select the first digit by turning the encoder wheel. To enter a number, you can use the respective number keys. The [stop/delete] key generates blank space.
- If you press the encoder wheel again, the selected number or letter is accepted and you can turn to the next digit.
- When all digits of the loco name are entered, the name can be confirmed and saved by pressing [↵].

By pressing [4] you can switch to the “change func. icon” menu.

Here you can assign symbols to every loco function from 0 to 24. Additionally, you can decide whether to use the respective functions as a switch or pusher function. (switching characteristic).

Switch function: With every keystroke the function switches between “on” and “off”.

Pusher function: If you press the key and hold it, the function is turned on. By letting go of the key, the function turns off.

- At first press [1] to decide whether
 - o you want to set the configuration of the symbols to “UNI”. Here, all special functions are displayed by standard symbols (a circle) and the “switch function” is activated (function stays “on” until the key is pressed again)
 - o you want to set the configuration of the symbols to “MULTI”. Here, you can assign an individual symbol to each function and you can decide whether to use the “switch function” or the “pusher function”.

On the following picture you can see an example where an individual symbol and the “switch function” is assigned to F1.



- With the [▲] and [▼] keys you can choose between one of the two possibilities and confirm it with the [↵] key.
- If “MULTI” is activated you can press [2] and enter the function number (0 - 24) you want to change. The number can be entered with the number keys and confirmed by pressing [↵].
- By pressing [3] the function symbol can be changed. You can select the symbol with the [▲] and [▼] keys out of the symbol list and confirm it by pressing [↵].

- By pressing [4] and using the [▲] or [▼] key, you can select between the “switch function” and the “pusher function”. Confirm your choice with [↔].
- Leave the sub-menu by pressing [0].

You can change the data format by pressing [5] and then use the [▲] and [▼] key to select. Confirm your selection by pressing [↔]. You can select between 14, 28 and 128 DCC speed levels. Speed levels: The speed of every locomotive is not controlled linearly but through speed levels. The higher the number of speed levels the more sensitive you can control the vehicle between a halt and its top speed.


































If you want to save the data set, press the [↔] key to leave the menu.

If you want to delete a selected loco data set, press the [stop/delete] key.

By pressing [lok] or [mode] you can leave the menu without saving the changes to the loco data.

10. Special function symbols

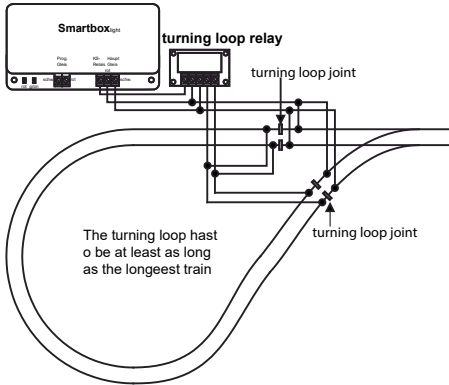
Hereafter you find a short overview of the before mentioned special function symbols and their meanings (non-binding). Overall, there are more than 160 special function symbols available.

	Preset: no Symbol		Light		Driver cabin - Front
	Sound		Interior Light		Driver cabin - Rear
	Mute Sound		High beam		Move up/down
	Horn		Tail Light		Move right/left
	Bell		Tail Light		Hook Up
	Whistle		Light front and back		Hook Down
	Conductor Whistle		Interior Light		Turn right
	Brake Squeal		Driver cabin lighting		Turn left
	Diesel motor		Start/Brake Inertia		Telex coupling
	Smoke generator		Doors Opening		Uncoupler
	Magnet		Power Pickup		Shunting gear

I. Further features

a. Connection of a turning loop

Because of the polarity of the 2-wire track, driving through a turning loop automatically leads to a short circuit. The most comfortable way to avoid the polarity problem is to install a reverser (turning loop switch). The **PIKO SmartBox_{light}** already comes with a pre-installed reverser. To switch the polarity, you only have to install a turning loop relay according to the following outline. When connecting the relay to the track please try to keep the connection points as close to the joint as possible.



If a short circuit is occurring, the turning loop relay will be switched before the system shuts down. If the short circuit is caused by a train driving over a turning loop joint, the polarity of the turning loop relay will be switched so quickly, that the driving performance of the train is not affected.

b. V.2 LocoNet[®]

The digital central is equipped with two LocoNet[®] ports at the back. The LocoNet[®] T-port of the digital station serves for the connection of the **PIKO SmartController_{light}** via the enclosed spiral cord. By using a five-way LOCONet[®] distributor you can connect further LocoNet[®] devices to the central, for example like further **PIKO SmartController_{light}**, response modules, LocoNet[®] switches and other LocoNet[®] devices. The LocoNet[®] T-port provides a supply current of 500 mA for the connected devices. If this current is not sufficient, you can provide another 500 mA by adding an extra LocoNet[®] power input.

II. DisplayNet operating status

Red LED off - Green LED on	Track current switched on (normal operating status)
Red LED on - Green LED off	Track current switched off (stop key pressed, short circuit or during active decoder programming)
Red LED on - Green LED flashing	Overtemperature
Red LED flashing - Green LED off	Undervoltage at the LocoNet® T power supply (Overload on the LocoNet® T port)
Red LED off - Green LED flashing	Digital central currently in LocoNet® programming mode

III. Technical data

a. Digital central station

- Power supply: Input: 240 V 50 Hz, Output: 15 V= / 2 A
- max. load main track output: 2 A
- max. load programming track output: 250 mA
- max. load LocoNet®-T: 500 mA
- Dimensions: 104 x 58 x 33 mm

b. PIKO SmartController_{light}

- 38 x 20 mm high definition display for a detailed representation of text and symbols
- LocoNet® port
- Power consumption during normal LocoNet® operation: 25 mA
- Dimensions: 180 x 80 x 35 mm

IV. Safety warnings

- Please read the safety warnings and this instruction manual before using the devices.
- Always treat your **PIKO SmartControl_{light}** devices with care! The devices contain sensible electronics; therefore, you should avoid exposing them to strong vibrations.
- The devices are no toys and should not be handled by children under the age of 14. However, children can be operated the devices under the supervision of adults.
- Never insert the connection cables into a power socket!
- Always check the power supply for damages to the cables, the plugs, the case or to other parts. In case of any damages, do not continue to use the device!
- Only use accessories that are intended for the device!
- Only use the **PIKO SmartControl_{light}** system if you are absolutely sure that there are no possible short circuits or wiring errors.
- Protect the devices from dust or any dirt. Clean the device on a regular basis.
- Protect the devices from wetness and extreme humidity!
- The devices are designed for the operation in closed rooms and not for the operation outdoors!
- Manipulations of hardware or software lead to loss of warranty rights!
- Keep this instruction manual in a safe place.

V. FAQ

If you have any questions, please visit our FAQ website. You can find it on the PIKO web shop under www.piko-shop.de/?a=faq. There, we provide you with the newest information about the **PIKO SmartControl_{light}** system. If you have any further questions you can find a contact form at the bottom of the page.

VI. Technical service hotline

If you have any technical questions about PIKO products you can reach us via our technical hotline

Tuesdays	from 4 PM to 6 PM
Thursdays	from 4 PM to 6 PM

under +49 03675 / 8972 - 42.

You can also send us a fax to +49 03675 / 8972 – 50 or write an email to hotline@piko.de!

Or write us a letter and send it to:

PIKO Spielwaren GmbH
Lutherstraße 30
96515 Sonneberg
Germany

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PIKO model trains – for every layout!

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