

4. Set the speed controller to "zero" position. Now the rear lighting flashes slowly 4 times.
5. Enter the number of the CV to be programmed at the control center like a locomotive address.
6. Press the direction switch briefly. Now the rear lighting flashes 4 times quickly.
7. Enter the desired value for the CV like a locomotive address at the control center.
8. Press the direction switch briefly. Now the rear lighting flashes slowly 4 times.

If further CVs are to be programmed, repeat points 5-8.

If you want to end the programming, switch the control center to "STOP" or enter the address "80" and briefly press the direction switch.

Since entries from 01 to 80 are only possible when programming with a Motorola** digital center from Märklin*, the value "0" must be entered via the address as "80".

Page register for entering CV numbers greater than 79 CV

addresses greater than 79 can only be programmed using the page register. This page register is CV 66. If CV66 is written with a value greater than 0, the contents of CV66 are added times 64 to each subsequent address value entered in all subsequent programming processes. The value entered must be in the range 1 to 64.

Example

If CV 82 is to be programmed with the value 15, CV66 must first be programmed with the value 1.

CV18 can then be programmed with the value 15. In the decoder, the value 15 is now stored in the CV address 82, which results from adding the contents of CV66 (in the example 1) multiplied by 64 (i.e. 64) and the CV address entered at the control center (18). CV66 should then be set to zero again so that subsequent programming can be stored in the desired CVs.

Offset register for entering CV values greater than 79 CV

values greater than 79 can only be programmed using the offset register. This offset register is CV 65. If CV65 is written with a value greater than 0, the contents of CV 65 are multiplied by 4 in all subsequent programming processes and added to each subsequently programmed CV value and stored in the corresponding CV.

Example

If CV 49 is to be programmed with the value 157, CV 65 must first be programmed with the value 25. CV 49 can then be programmed with the value 57. The value $4 \cdot 25 + 57$ is now stored in the decoder. CV 65 should then be set to zero again so that subsequent programming with values less than 79 is not accidentally corrupted.

Note: When programming the CV65 and CV66, the contents of the offset and page registers are not taken into account.

Note: If the Motorola** programming mode is exited, the page and offset registers (CV65, CV66) are automatically set to zero again.

Programming with the Mobile Station 1 (Märklin* 60652) (for Uhlenbrock Dec. 76560 and 76420 from verse 25)

The programming menu is only available for certain locomotives in the MobileStation's locomotive menu. A locomotive that has a programmable decoder must be selected from the database.

Proceed as follows: 1.

Before programming, be sure to remove all locomotives from the track that are not to be programmed!

2. Create a new locomotive and select the item number. 36330 out. The locomotive is on the display Ee 3/3 to see.
 3. Press the "MENU/ESC" button and select the "CHANGE LOCATION" section. Here you will find the last function, among other things, the programming register called "REG". Use this function to change the CV's of the decoder. With this function you can only write the CV's.
 4. Enter the CV number and confirm it with the switch button.
 5. Then enter the value of the CV and confirm it with the switch button.
- The mobile station now programs the CV with the desired value.

Programming with the Mobile Station 2 (Märklin* 60652)

Use the Mobile Station 2 DCC programming menu

Technical data

Sound channels for playback:	4
Max. Duration of saved sound: Power consumption:	320 seconds up to 160 mA 17.8
Size:	x 11.0 x 4.7 mm

* Märklin* is a registered trademark of Gebr. Märklin* & Cie. GmbH, Göppingen

** Motorola** is a registered trademark of Motorola** Inc. Tempe-Phoenix (Arizona/USA)

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#36193 PIKO sound module

The sound module for all locomotive decoders with SUSI interface

Features • Intelligent

sound control with 320 seconds of sound memory • Powerful, digital power amplifier for 8 ohm loudspeakers • Generates the locomotive's driving noise, brake squealing and random noises when stationary, such as additional units, shoveling coal, etc. • Simultaneous playback via 4 independent

sound channels • 2 sound-dependent special function outputs for firebox, smoke generator, etc. • Up to 4 custom sounds can be added • Maximum of 12 additional switchable sounds such as whistle, bell, horn, decoupler

noise or door warning signal and 4 own sounds

• Function mapping up to f 28

• Random sounds can be switched • Adjustable sound response to changes in engine load, such as driving uphill and downhill. • With smart start function: When starting, the sound module stops the locomotive decoder until it starts of the vehicle takes place synchronously with the engine noise.

• Adjustable volume and mute switch with fade-in and fade-out function • Input for Hall sensor e.g. for wheel-synchronous exhaust beat on steam locomotives or curve squeaking on E- and Diesel locomotives

• Up to three modules can be connected to a locomotive decoder, e.g. for multi-engine locomotives • With connection pads for storage capacitor for uninterrupted sound enjoyment • Locomotive sound can be recharged; Various sounds are available on the Internet (www.uhlenbrock.de)

Description PIKO

Sound Modules are additional modules for locomotive decoders with SUSI interfaces, which are marked with the corresponding logo.

The sound modules deliver sounds that are true to the original, like the sounds of the original locomotives. Thanks to the intelligent sound control, the sounds reproduced are adapted to the respective driving situation; for example, the sounds are changed prototypically when driving uphill and downhill.

If the locomotive is to start moving, the sound module uses the locomotive decoder to stop the engine until the vehicle starts moving synchronously with the sound. For example, in a diesel locomotive the engine howls first before the vehicle moves. When the locomotive is stopped, the train brake squeaks. When stationary, various operating noises of the respective locomotive are randomly played, such as compressed air, additional units and shoveling coal.

These random sounds can also be switched using a special function button.

The two special function outputs of the sound module are directly controlled by a sound. For example, it is possible to have the light of the firebox flicker automatically when the random sound of "shoveling coal" occurs, or to simulate the glow of the brake discs when the brakes squeak. On diesel locomotives, the engine starting noise and the engine stopping can be heard when the diesel sound is switched on and off.

Thanks to the new 4-channel technology, the driving noise of the locomotive and 3 other locomotive-specific noises can be switched on at the same time using a special function button. Depending on the locomotive type, this can be a whistle, horn, bell, door warning tone or the sound of an uncoupling process. The additional noises can also be varied in terms of tone length - for example, a short switch-on produces a short whistle, a longer switch-on pulse produces a longer whistle. In addition, up to 4 custom sounds (wav) can be imported and called up using the function keys f0 - f28. The playback of the steam locomotive driving sounds can be either wheel-synchronous or speed-controlled.

If the locomotive moves out of the visible area of a model railway system, for example into the shadow station, the entire locomotive sound can be softly faded out using the "mute" function using a special function button and then slowly faded in again when the locomotive reappears, adapted to the current driving situation.

Configuring your own sounds is done using the additional software "SUSI-SoundManager" (Uhlenbrock item no. 31060). Here you can also specify how your own sound should react to changing a special function button (on, loop, off).

To load all sounds, the sound charging adapter 31010 (RS 232) or the USB sound charging adapter 31050 (USB, incl. SUSI SoundManager) from Uhlenbrock are required.

Installing a sound module SUSI**Interface** Plug the

SUSI plug into the SUSI socket on your decoder. The sound module is supplied with operating voltage and data by the decoder.

Loudspeaker

The included loudspeaker was adapted to the model with its installation dimensions. It is installed into the frame of the locomotive using four screws provided. Good sound reproduction is achieved through sound openings on the underside of the locomotive.

Additional

connections On the back of the module there are 6 soldering pads for additional functions such as firebox, smoke generator and for clock generators for the wheel-synchronous exhaust beat (see connection sketch).

Sound-dependent additional functions

Consumers can be connected to the outputs SA1 and SA2 that are controlled depending on the sound.

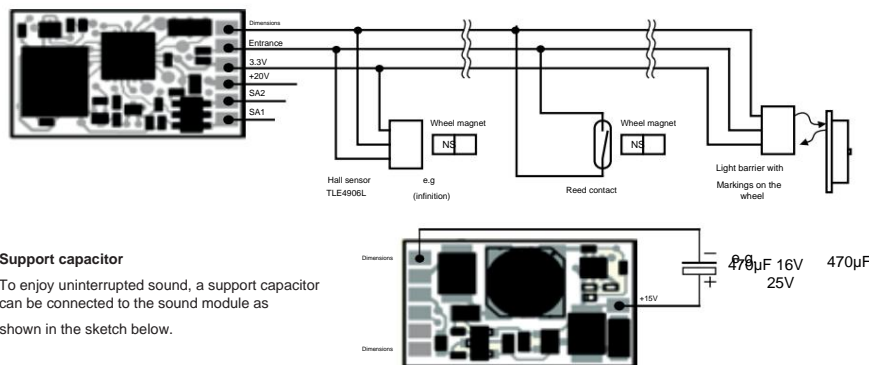
On a steam locomotive, a smoke generator can be connected to SA1 and firebox lighting can be connected to SA2. On electric locomotives or light railways, two lights can be connected. A simulation of glowing brake discs or a brake light can be connected to SA1 and the breakaway spark from a pantograph can be connected to SA2. On diesel locomotives, only output SA1 is used for glowing brake discs.

For the consumers mentioned, the second pole is connected to +20V. Please pay attention to the polarity of LEDs.

External input for e.g. wheel rotation sensor

To generate a wheel-synchronous exhaust beat on a steam locomotive or for curve squeaking on an electric or diesel locomotive, the sound module has a sensor input. A reed contact or a Hall sensor can be used as a sensor together with magnets on a locomotive wheel (bogie in case of squeaking curves), or a light barrier with corresponding markings on a locomotive wheel.

The reed contact, the Hall sensor or the light barrier are connected to the solder pads marked in the connection sketch.

**Support capacitor**

To enjoy uninterrupted sound, a support capacitor can be connected to the sound module as shown in the sketch below.

Attaching the sound module in the vehicle

Use the enclosed adhesive pad to attach the sound module anywhere in the locomotive. The adhesive pad protects the sound module from conductive connections and holds it securely in place.

Commissioning

When placing the module in the vehicle, make sure that there is no conductive connection anywhere! Make sure that even after the locomotive is closed, no short circuits can occur and no cables become trapped.

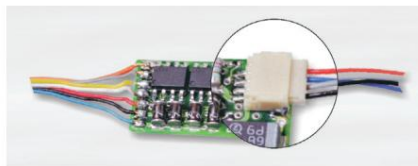
A short circuit destroys the module and possibly the electronics of the locomotive!

Switching the sounds on and off

Individual sounds can be switched on and off using special function keys from the digital center.

The assignment of the sounds to the special function keys can be changed using CVs 903 to 931. When delivered, the assignment specified in the table applies.

Function assignment	Type of sound	Sound number 3 2
Special function f2	Driving noise of the locomotive	
Special function f5	whistle or horn	
Special function f6	Bell, whistle or horn	
Special function f7	Uncoupler noise or door warning tone	
Special function f8	Mute function	1 4 8



If the locomotive moves out of the visible area of a model railway layout, e.g. into the shadow station, the entire locomotive sound can be softly faded out by switching on the mute function (f8 "on", in the factory setting). Internally in the module, the sound continues to be generated according to the respective driving situation, even when hidden. If the sound is shown again when the special function is switched off, the sound will gradually become audible again, adapted to the current driving situation.

Volume

The volume can be changed via the CV902. It is set to the maximum at the factory.

Settings for dynamic sound changes

Some settings that affect the change of the sound in relation to the current driving situation can be adapted to the type of locomotive used. The settings affect the sound change when the load changes (uphill and downhill travel), the speed threshold for the onset of brake squealing and the switch-on threshold for the electric fan on an electric locomotive. CV 937 A changes the sensitivity to load changes. If a value of 1 is programmed here, the sound reacts very quickly to uphill or downhill driving. A value of 8 results in a delayed response. With CV 938 A the triggering threshold for a sound change when driving uphill (load increase) can be set and with CV 939 A the triggering threshold for a sound change when driving downhill (load decrease). All values depend on the locomotive decoder used and the locomotive used and must be determined through driving tests.

The CV 936 can be used to change the speed threshold at which the brake squealing begins when the locomotive's speed is reduced. The CV 934 sets the speed threshold at which the noise of the cooling fan is switched on when an electric locomotive sounds.

With a steam locomotive sound, the repetition rate of the exhaust beats can be influenced. Using CV 938 you can set the time between 2 exhaust beats at maximum locomotive speed, using CV 939 at minimum locomotive speed. The larger the value in the corresponding CV, the longer the time between the exhaust hits. With the CV 937 you can set a time for how long an idle sound should be heard when idling.

All settings are preset at the factory for Uhlenbrock locomotive decoders and common H0 locomotives, but can easily be adapted to other vehicles.

Load new sounds into the module

If the sound of the module is to be changed, the module must be separated from the locomotive decoder and plugged into the corresponding socket of the IntelliSound charging adapter (Uhlenbrock item no. 31 010 or 31 050) using the SUSI plug. Please refer to the operating instructions for the IntelliSound charging adapter for the operating steps for changing the sound. You can find a large selection of different sounds on our website "www.uhlenbrock.de".

Load your own sounds into the module

In addition to the existing, loaded sounds, it is also possible to load a maximum of 4 of your own sounds with the IntelliSound charging adapter. To do this you need the sound program SUSI-SoundManager and your own sounds in wav format.

Operation of several sound or function modules on a locomotive decoder

If several (up to three) sound or special function modules are operated together on a decoder with SUSI interface, each module can be assigned its own CV address range via CV 897, so that all modules are independent and can be programmed from each other. To do this, each module is first connected individually to the locomotive decoder. Each module can now be assigned its own CV address range (1, 2 or 3, see CV table) via CV 897. If all modules are then connected together, each module can be addressed and programmed via its own CV address range. The changed CV addresses depending on the CV address range are listed in the list of CVs. Please note that the explanations in the previous sections refer to address area 1. If you change the address range, you must use the corresponding CV addresses for the 2nd or 3rd address range from the list of CVs.

Programming

The basis of all the decoder's setting options are the configuration variables (CV's) in accordance with the DCC standard. The sound module can be programmed via the sound charging adapter or via a locomotive decoder.

When programming via a locomotive decoder, all procedures provided by the locomotive decoder are possible.

When using a Uhlenbrock locomotive decoder, programming can be done with the Intellibox, PIKO Power Box, DCC centers and Motorola** centers. For third-party manufacturers, please refer to the locomotive decoder operating instructions for programming instructions.

Programming with the Intellibox

We recommend, regardless of the format in which the locomotive decoder is to be operated later, to program the sound module, if it is connected to a Uhlenbrock decoder, via the programming menu for DCC decoders. For the exact procedure, please read the corresponding chapter in the Intellibox manual.

Programming with DCC devices

Use the programming menu of your DCC center to read out and program the sound module directly via CV programming if it is connected to a Uhlenbrock decoder. Please refer to the manual for the control panel used for the exact procedure.

Programming with a Märklin* central

If the sound module is connected to a Uhlenbrock decoder, all CVs can be programmed with a Märklin* central, but not read out.

1. Switch the central unit off and on.
2. Select the address of the locomotive decoder and switch on the light.
3. Press the direction switch at least 5 times in a row until the lighting goes out.