Uhlenbrock digital

IntelliSound 3 – Module 32 300 and 32 304

The Sound module for all Locomotive decoders with SUSI-Interface.

Features

- Intelligent sound control with 320 seconds of sound buffer
- Efficient, digital output for 8Ohm speaker
- Generates the operating sounds of the locomotive, brake squealing and random noises while stationary, such as e.g. auxiliary generator, coals shoveling etc.
- Simultaneous replay via 4 independent sound channels
- 2 Sound dependent special function outputs for fire box, smoke generator etc.
- Up to 4 custom sounds can be added
- Maximum of 12 additionally adjustable sounds such as whistle, bell, horn, uncoupling sounds or door warning signal and 4 custom sounds
- Function mapping up to f28
- Switchable random sounds
- Adjustable sound to reflect motor loading such as up or down hill.
- With Smart start function: The sound module stops the locomotive decoder when starting, until the vehicle acceleration is synchronized with the engine noise.
- Adjustable volume and audio muting with fade in and out function
- Input for Hall sensor e.g. for wheel synchronous exhaust impact with steam engines, or curve squealing with Electric and diesel locomotives
- Connect up to three modules to a locomotive decoder, e.g. for multi-engine locomotives
- With solder pads for storage capacitor break free sound.

Description

IntelliSound 3 Modules are add-on modules for locomotive decoders with a SUSI-Interface that are identified with the appropriate Logo.

The Sound modules provide sounds that are true to the original sounds of the prototype locomotive. The intelligent Sound control matches the reproduction of various sounds to the running conditions, e.g. when going uphill the sounds change true to the prototype.

If the locomotive is to start, the sound module stops the motor via Locomotive decoder, until the sound is in synch with the start up. So, for example, a diesel engine winds up before locomotives moves off. If the locomotive stops you hear the brakes squealing. While stationary you will hear various random sounds appropriate to the locomotive e.g. compressed air, generator and coal shovelling. These random sounds can also be activated by a function key.

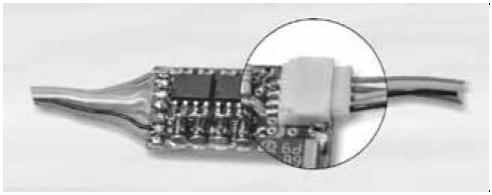
The Sound module's two special function outputs directly control a sound. So it is possible for example, to automatically flicker the light in the fire box when you hear the "coal shovelling", or to simulate the glowing of brakes during brake squealing. With diesel locomotives the motor start noise and the motor shut down sounds can be heard when the diesel sound is switched on and off.

With the new 4-channel technology the running sounds and 3 additional locomotive specific sounds can be simultaneously switched by special function keys. Depending on the type of locomotive this pertains to the whistle, horn, bell, door warning tone and the uncoupling sounds. These ancillary sounds can also be varied in sound length – short on time results in a short whistle and a longer (on) pulse gives a longer whistle. Furthermore up 4 custom sounds (wav) can be loaded and recalled with function keys f0 - f28. The production of steam locomotive running sounds can be optionally controlled by wheel synchronisation or speed steps.

If the locomotive runs out of sight on a layout, e.g. into the shadow station, the sound can be faded out by the "mute" function with a special function key and slowly faded in again as the locomotive reappears.

The different sounds are configured with the "SUSI-SoundManager" software (Part No. 31060). Here you can also specify in which way a sound will react when changing the state of a special function (on, loop, off). All sounds are loaded with the Sound loading adapter 31010 (RS 232) or the USB- Sound loading adapter 31050 (USB, incl. SUSI-SoundManager).

Installing a Sound module



SUSI-Interface

Insert the SUSI-plug into the SUSI Socket of your decoder. The Sound module gets its power from the decoder.

Loud Speaker

The IntelliSound 3-Module can have an 8 Ohm speaker from our assortment connected to the black unconnected wires. Every loudspeaker requires a resonance shell. Sometimes the locomotive body or a wagon chassis can serve as a resonance body. When this is not possible we also offer various speakers with a resonance shell. "The larger the speaker the louder and clearer the sound" applies when choosing a speaker.

If a loudspeaker with a resonance shell is used it must be glued air tight to the speaker. Also seal up the wire slot and any mounting holes.

The loud speaker is then installed in the vehicle so it can direct the sound out via as large an opening as possible.

Additional Connections

On the underside of the module locate 6 solder pad additional connections such as firebox, smoke generator and clock for wheel-chuff synchronization (see connection diagram).

Sound dependent Auxiliary functions

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

In a steam locomotive a smoke generator can be connected to SA1 and lighting for the firebox to SA2.

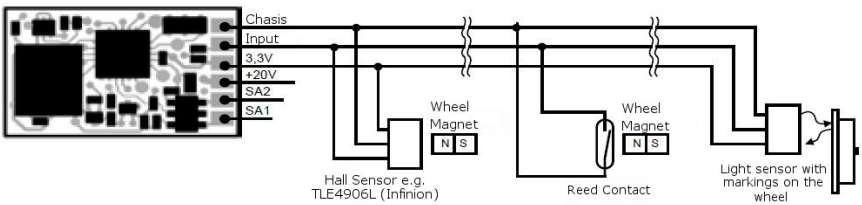
With an E-Locomotive or Commuter train two lighting types can be connected. To SA1 a simulated brake disc glow or a brake light and to SA2 the flash of a disconnecting power pickup.

For Diesel locomotives only output SA1 for a simulated brake discs glow.

On the above mentioned loads the second pole is connected to +20V. For LEDs please take note of the polarity.

External Input for e.g. Wheel rotation sensor

In order to produce the wheel synchronization to the chuffs of a steam locomotive or curve screeching in an E-locomotive or diesel locomotive, the sound module has a special sensor input. As sensor, a reed switch or a Hall sensor together with magnets on a locomotive wheel (Bogie for curve screeching), or a light sensor with the corresponding markings on a wheel can be used. The reed switch, Hall sensor or light sensor are connected to the solder pads as shown in the diagram.



Storage Capacitor

For interruption-free enjoyment of the sound a storage capacitor can be connected to the sound module, as shown in the accompanying diagram.

Mounting the Sound module in the Vehicle

Use the enclosed double-sided adhesive tape to attached the sound module at the desired location inside the locomotive. The adhesive tape protects the sound module from conductive contact and holds it in place safely.

Putting it to Use

Take care when mounting the module inside the vehicle not to make any conductive contact with any part! Ensure that when closing the locomotive no short circuit can occur with the body and that no wire is cinched.

A short circuit will destroy the module and eventually the electronics in the locomotive!

Switching Sounds On and Off

The individual sounds can be turned on and off with special function keys from the digital center. The assignment of the sounds to the special function keys can be configured in CV's 903 bis 931. In factory default state they are assigned as shown in the table.

Sound number	Type of sound	Factory default
1	Bell, whistle or horn	Special Function f4
2	Whistle or horn	Special Function f2
3	Running noises of the locomotive	Special Function f1
4	Uncoupling or door alarm	Special Function f3
8	Mute function	Special Function f8

If the locomotive runs out of sight on a layout, e.g. into the shadow station, the sound can be faded out by the "mute" function with a special function key (f8 in factory default state), switching all sounds off. Internal to the module the sound continues to be issued according to the driving condition. If the sound is faded in again by switching the special function off, the sound will be audible again and matching the driving status.

Volume

The volume can be change via CV 902. Ex-factory it is set to maximum.

Configuring for dynamic Sound changing

Some settings, which concern the change of the sound in regard to the present driving conditions, can in each case be adapted to the type of locomotive used. The settings concern the change in sound change with loading (uphill and downhill), the speed threshold for starting the brake screeching and switch-on threshold for the electric blower in an E-locomotive.

CV 937 A changes the sensitivity to load regulation. If a value of 1 is programmed here, the sound reacts very quickly to uphill and downhill running. A value of 8 results in a delayed reaction. With CV 938 A the trigger threshold for a sound change for uphill driving (Load increase) can be set and with CV 939 A the trigger threshold for a change in sound for downhill driving (Load reduction) can also be set. All values depend on the locomotive decoder and the locomotive used and must be determined by test driving. With CV 936 the speed threshold can be changed and the brake screeching starts when the locomotive speed is reduced.

CV 934 sets the speed threshold at which E-locomotives sound the cooling blower is closed.

In a steam locomotive the repeat rate of the chuffs can be influenced. In CV 938 the time between 2 chuffs at maximum locomotive speed can be set, in CV 939 for minimum locomotive speed. In both cases, the larger the value in the relevant CV, the longer the time between the chuffs. With CV 937 a time can be set for how long an idle sound in idle running is to be heard.

All ex-factory settings are for Uhlenbrock locomotive decoders and preset for H0 locomotives, but can be matched to other vehicles without problems.

Loading new Sounds into the Module

If the sound in the module is to be changed, then the module must be separated from the locomotive decoder and the SUSI-plug inserted into the socket of the IntelliSound Loading adapter (Part No. 31 010, or 31 050).

The operating steps for changing the sound are found in the manual for the IntelliSound Loading adapter.

A large selection of various sounds can be found on our internet site “www.uhlenbrock.de”.

Loading Custom Sounds into the Module

In addition to the pre-programmed sounds it is possible to add a maximum of 4 custom sounds with the Intelli-Sound Loading adapter. For this you use the Sound program SUSI-SoundManager and your own sounds in wav format.

Multiple Sound or Function modules on one Locomotive decoder

When multiple (up to three) Sound or special function modules are to be connected together to the SUSI-interface, each module can be assigned its own address range with CV 897, so that all modules can be programmed independently of each other. For this each module is individually connected to the locomotive decoder. Each module can now be assigned its own CV address range (1, 2 or 3, see CV Table) in CV 897. If all modules are now connected together, each module can now be addressed and programmed in it’s own CV address range. The changed CV addresses as per CV address range are shown in the List of CV’s. Please note that the explanation in the preceding sections refer to address range 1. When changing the address range you must use the appropriate CV addresses for the 2nd or 3rd address range from the CV list.

Programming

The basis of all the decoder’s configuration options is the Configuration Variables (CV’s) as in the DCC standard. The Sound module can be programmed with the Sound Loading Adapter, or via a locomotive decoder. When programming via locomotive decoder all methods supported by the locomotive decoder are available. By using an Uhlenbrock locomotive decoder, an Intellibox, DCC Centre or Motorola centre can be used for programming.

When using third party devices please refer to the locomotive decoder programming section of that device’s manual.

Programming with the Intellibox

We recommend that regardless of the format the locomotive decoder will be using later on, when it is connected to an Uhlenbrock decoder, it be programmed via the Programming Menu for DCC decoders. For exact detail on the method please read the corresponding chapter in the Intellibox Handbook.

Programming with DCC devices

When using the Programming Menu of your DCC Centre to program the sound module, if it is connected to an Uhlenbrock decoder, program it by the CV direct Programming method. For exact details on the method please read the corresponding chapter in the Intellibox Handbook.

Programming with a Märklin Center

As long as the sound module is connected to an Uhlenbrock decoder all CV's can be programmed with a Märklin center, but not read.

1. Switch Center off and on.
2. Select the address of the decoder and switch the light on.
3. Operate the direction change-over 5 times in quick succession with the stationary locomotive (speed step 0), until the light turns off.
4. Set the speed controller to "zero". The rear light now flashes slowly 4 times.
5. Enter the number of the CV that is to be programmed.
6. Briefly operate the direction change-over. The rear light flashes fast 4 times.
7. Enter the desired value for CV e.g. a locomotive address.
8. Briefly operate the direction change-over. The rear light flashes slowly 4 times.

If further CV's are to be programmed repeat points 5-8.

If programming is to be terminated switch the center to "STOP" or set the address to "80" and briefly operate the direction change-over.

Since a Motorola digital center from Märklin only accepts inputs of 01 to 80, the value "0" must be entered by entering the address as "80".

Page-Register for inputting CV-Numbers greater than 79

CV addresses larger than 79 can only be programmed with the help of the page register, CV66. If CV66 has a value higher than 0, then the contents of CV66 times 64 will be added to every address entered. The entered value must lie in the range 1 to 64.

Example

If CV82 is to be programmed with a value of 15, then CV66 must first be programmed with a value of 1. Subsequently, CV18 can be programmed with a value of 15. The decoder places the value 15 into CV82, which is derived from multiplying the contents of the CV66 (in example 1) by 64 (thus 64) and then adding the entered CV address (18). Lastly CV66 should be set back to zero so the subsequent programming is done in the correct CV's.

Offset-Register for entering CV values greater than 79

CV values larger than 79 can be programmed only with the help of the offset register. The offset register is CV65. If CV65 contains a value > 0, then all following programmed values are calculated by multiplying the contents of CV65 by 4 and adding the result to the entered value.

Example

CV49 is to be programmed with a value of 157 then CV65 must first be programmed with the value of 25. Subsequently, CV49 can be programmed with a value of 57. The decoder places the value 4 * 25 + 57 into CV49. Lastly CV65 should be set back to zero so the subsequent programming is done in the correct CV's.

Note: When programming CV65 and CV66 the contents of the offset and page registers have no effect.

Note: When leaving Motorola programming mode the page and offset registers (CV65, CV66) are automatically reset to zero.

Programming with a Mobile Station 1 (60652) (for Dec. 76560 and 76420 from Ver. 25)

The Programming Menu in the Loco Menu of the Mobile Station is only available for certain locomotives. Form the Database a locomotive must be selected that is fitted with a programmable decoder.

Use the following procedure:

1. Before programming remove all locomotives that are not to be programmed from the track!
2. Add a new locomotive and select Part No. 36330. The Display then shows locomotive Ee 3/3.
3. Press the "MENU/ESC" button and select the "LOK Change" ("LOK ÄNDERN") column. Here you will find as last function of Register Programming indicated by "REG". Use this function to change the decoder's CV's. You can only write to the CV's with this function.
4. Enter the CV number and confirm this with the reversing knob.
5. Then enter the value for the CV and confirm this with the reversing knob.

The Mobile Station then programs the CV with the desired value.

Programming with a Mobile Station 2 (60653)

Use the DCC-Programming menu of the Mobile Station 2.

Table of individual CV's (Configuration Variables)

CV Address Range 1	CV Address Range 2	CV Address Range 3	Description	Value Range	Factory default
897	897	897	**SUSI Address range** 1 = from 900 to 925 2 = from 940 to 965 3 = from 980 to 1005	1-3	1
900	940	980	**Manufacturer ID**	-	85
901	941	981	**Software version**	-	varies.
902	942	982	**Sound Volume**	0-255	255
903	943	983	**function activated Sound Number x** (x = value of CV) x = 0 no Sound is activated x = 1 Bell or Horn 1 x = 2 Whistle or Horn 2 x = 3 operating noises of the locomotive x = 4 uncoupling or door alarms x = 5 conductor whistle short x = 6 station announcement x = 8 All sounds fade out/in x = 9 pantograph (with Electric Locomotives) x = 11 Departure announcements x = 12 conductor whistle long x = 14 coal shovelling / door closing tone x = 15 pump / air compressor x = 16 attention whistle x = 17 blowdown / vacant x = 18 vibrating stoker / vacant x = 95 smoke generator always at maximum x = 96 smoke generator always off x = 97 switch brake sounds off by function x = 98 Blower manual (on Ellok) by Function x = 99 Startup steam hiss manual (steam engine) x = 200 custom Sound x = 201 custom Sound x = 202 custom Sound x = 203 custom Sound	0 - 18 95 - 99 200 - 203	0
904	944	984	**f1 activated Sound Number x** value of x according to CV903/943/983	as above	3
905	945	985	**f2 activated Sound Number x** value of x according to CV903/943/983	as above	2
906	946	986	**f3 activated Sound Number x** value of x according to CV903/943/983	as above	4
907	947	987	**f4 activated Sound Number x** value of x according to CV903/943/983	as above	1
908	948	988	**f5 activated Sound Number x** value of x according to CV903/943/983	as above	16
909	949	989	**f6 activated Sound Number x** value of x according to CV903/943/983	as above	6
910	950	990	**f7 activated Sound Number x** value of x according to CV903/943/983	as above	0
911	951	991	**f8 activated Sound Number x** value of x according to CV903/943/983	as above	8
912	952	992	**f9 activated Sound Number x** value of x according to CV903/943/983	as above	5
913	953	993	**f10 activated Sound Number x** value of x according to CV903/943/983	as above	0
914	954	994	**f11 activated Sound Number x** value of x according to CV903/943/983	as above	15
915	955	995	**f12 activated Sound Number x** value of x according to CV903/943/983	as above	0
916	956	996	**f13 activated Sound Number x** value of x according to CV903/943/983	as above	11
917	957	997	**f14 activated Sound Number x** value of x according to CV903/943/983	as above	14
918	958	998	**f15 activated Sound Number x** value of x according to CV903/943/983	as above	0
919	959	999	**f16 activated Sound Number x** value of x according to CV903/943/983	as above	12
920	960	1000	**f17 activated Sound Number x** value of x according to CV903/943/983	as above	9
921	961	1001	**f18 activated Sound Number x** value of x according to CV903/943/983	as above	0
922	962	1002	**f19 activated Sound Number x** value of x according to CV903/943/983	as above	0
923	963	1003	**f20 activated Sound Number x** value of x according to CV903/943/983	as above	0
924	964	1004	**f21 activated Sound Number x** value of x according to CV903/943/983	as above	0
925	965	1005	**f22 activated Sound Number x** value of x according to CV903/943/983	as above	0
926	966	1006	**f23 activated Sound Number x** value of x according to CV903/943/983	as above	0

927	967	1007	**f24 activated Sound Number x** value of x according to CV903/943/983	as above	0
928	968	1008	**f25 activated Sound Number x** value of x according to CV903/943/983	as above	200
929	969	1009	**f26 activated Sound Number x** value of x according to CV903/943/983	as above	201
930	970	1010	**f27 activated Sound Number x** value of x according to CV903/943/983	as above	202
931	971	1011	**f28 activated Sound Number x** value of x according to CV903/943/983	as above	203
934	974	1014	**Switch threshold for Electric blower on an E-Loco** 255 = no blower noises	0-255	200
935	975	1015	**Configuration** Value Bit 0 = 0 Chuff steam loco only by reed switch Bit 0 = 1 Chuff steam loco automatic and by reed switch 1 Bit 1 = 1 Pause before repeat of whistle 2 Bit 2 = 1 Chuffs halved 4 Bit 4 = 0 Fire box flickering Bit 4 = 1 Output Fire box while fireman shoveling 16 Bit 6 = 1 Change fader time to 8 seconds and automatically on at power on 64 Bit 7 = 0 The end step is always on Bit 7 = 1 The end step is off when the sound off 128	0- 195	129
936	976	1016	**Threshold for Brake noises** 255 = no brake screeching	10 - 255	80
937	977	1017	**Idle time in Seconds** 0 = Idle off 255 = Idle always on	0 - 255	15
938	978	1018	**Time between chuffs** at maximum Locomotive speed without contact	0 - 100	0
939	979	1019	**Time between chuffs** at minimum Locomotive speed without contact	50 - 255	230
1021	965	1005	**Setting of the Bank to program** For all following settings = 1 (Bank A)	0,1	0
The following Expert - CVs (Bank A) are only programmable when CV 1021 is set to 1. After some Programming in Bank A set CV 1021 back 0!					
900 A	940 A	980 A	Hardware-Version (Product ID)	-	0
901 A	941 A	981 A	Additional information Hardware / Software Version	-	255
903 A	943 A	983 A	relative volume for custom Sound - Number 200	25 - 255	128
904 A	944 A	984 A	relative volume for custom Sound - Number 201	25 - 255	128
905 A	945 A	985 A	relative volume for custom Sound - Number 202	25 - 255	128
906 A	946 A	986 A	relative volume for custom Sound - Number 203	25 - 255	128
924 A	964 A	1004 A	**Special function with which the external input on E-locos and Diesel locos for the Curve screeching, can be switched off** Values 0-28 assigned to functions f0 to f28 Value = 31 Curve screeching always active	0 - 28 31	31
925 A	965 A	1005 A	**Special function with which the timeout in CV 926 A can be switched off** Values 0-28 assigned to functions f0 to f28 Value = 31 no switch off	0 - 28 31	31
926 A	966 A	1006 A	**Delay for taking off** in 32ms steps (30 = 1 Seconds, 254 = 8.13 Seconds 0 = none, 255 = off (Delay then Sound controlled)	0 - 254	255
927 A	967 A	1007 A	Steam loco load time, acceleration triggered	5 - 20	5
928 A	968 A	1008 A	Steam loco load time, increase in load triggered	5 - 20	5
929 A	969 A	1009 A	Steam output (SA1) at stop with Sound on 0-100 %	0 - 100	20
930 A	970 A	1010 A	Steam output (SA1) running with Sound on 0-100 %	0 - 100	80
931 A	971 A	1011 A	Steam output (SA1) in idle with Sound on 0-100 %	0 - 100	35
932 A	972 A	1012 A	Steam out. (SA1) at take-off with Sound on 0 - 100 % During the delay (CV 926 A) a connect smoke generator is preheated to this value	0 - 100	100
The following settings for automatically triggered Sounds when driving off					
933 A	973 A	1013 A	Timeout for automatic triggering of Sound number 16 (Short whistle) 0 = always, 255 = never	0 - 255	255
934 A	974 A	1014 A	Standing time for automatic Sound function 99 (Take off hissing) 0 = from 1 Second, 255 = never	0 - 255	90
The following settings for dynamic Sound reactions					
935 A	975 A	1015 A	Recognition "faster"	120 - 138	131
936 A	976 A	1016 A	Recognition "slower"	120 - 138	125
937 A	977 A	1017 A	**Sensitivity to load regulation** 1 = reacts really fast to 8 = reacts very slowly	1 - 8	6
938 A	978 A	1018 A	**Trigger threshold with Motor load increase** 128 = Tone change with load increase switched off	0 - 128	3
939 A	979 A	1019 A	**Trigger threshold with Motor load decrease** 128 = Tone change with load decrease switched off	0 - 128	3

Factory settings

When delivered the module is configured as follows:
Special function f1 switches sound No. 3 (running sounds of the Locomotive)
Special function f2 switches sound No. 2 (Signal tone 2)
Special function f3 switches sound No. 4 (uncoupling noise or door alarm)
Special function f4 switches sound No. 1 (Signal tone 1)
Special function f8 switches sound No. 8 (Muting function)
Maximum volume

Technical Data

Sound channels for replay:	4
Max. duration of stored sound:	320 seconds
Power consumption:	up to 160mA
Size:	17.8 x 11.0 x 4.7 mm

Guarantee declaration

Each component is tested for its complete functionality before distribution. If a fault should arise within the guarantee period of 2 years, we will repair the component free of charge upon production of proof of purchase. The warranty claim is void if the damage was caused by inappropriate treatment.

Please note that, according to EMV regulations, the component may only be installed in vehicles which carry the CE logo.

Uhlenbrock digital

Our Contact Details:

We are available if you have any questions!

Internet: FAQs can be found on www.uhlenbrock.de

E-Mail: service@uhlenbrock.de

Hotline: +49 (0)2045 8583-27, Wed from 16:00 to 18:00 and Mon - Tue - Thur - Fri from 14:00 to 16:00

Service: In the event of a defect or failure send the unit together with the invoice and a short description of the fault back to us for repair.

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Electronic devices do not belong in household rubbish

Part No. 32 300