

927	967	1007	F24-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
928	968	1008	F25-activated Sound Number x Value for x corresponding to CV903/943/983	see above	200
929	969	1009	F26-activated Sound Number x Value for x corresponding to CV903/943/983	see above	201
930	970	1010	F27-activated Sound Number x Value for x corresponding to CV903/943/983	see above	202
931	971	1011	F28-activated Sound Number x Value for x corresponding to CV903/943/983	see above	203
934	974	1014	Parameters for engine fans in electric loco 255 = no fan sound	0 - 255	200
935	975	1015	Configuration Bit 0 = 0 Steam loco chuff rate (only via sensor) Bit 0 = 1 Steam loco chuff rate (automatic and via sensor) Bit 1 = 1 Delay before whistle blasts Bit 2 = 1 Steam loco chuff rate cut in half Bit 4 = 0 Firebox flicker Bit 4 = 1 Firebox flicker only when shoveling coal Bit 6 = 1 Change fade time to 8 seconds and remain automatic when activated Bit 7 = 0 Amplifier always activated Bit 7 = 1 Amplifier deactivated when sound is off	Value 1 2 4 16 64 128	0 - 215 129
936	976	1016	Parameters for brake squeal 255 = no brake squeal	10 - 255	80
937	977	1017	Idling time (in seconds) 0 = Idle off 255 = Idle always on	0 - 255	15
938	978	1018	Time between exhaust chuffs At maximum loco speed without sensor	0 - 100	1
939	979	1019	Time between exhaust chuffs At minimum loco speed without sensor	50 - 255	230
1021	1061	1101	Setting the Bank to be programmed For all subsequent settings = 1 (Bank A)	0, 1	0
The following Expert-CVs (Bank A) can only be programmed when CV 1021 is set to 1. After programing in Bank A, make sure to set CV 1021 back to 0!					
900 A	940 A	980 A	Hardware-Version (Product ID)	-	-
901 A	941 A	981 A	Further information on Hardware / Software Version	-	255
903 A	943 A	983 A	Relative volume for blank Sound Number 200	25 - 255	128
904 A	944 A	984 A	Relative volume for blank Sound Number 201	25 - 255	128
905 A	945 A	985 A	Relative volume for blank Sound Number 202	25 - 255	128
906 A	946 A	986 A	Relative volume for blank Sound Number 203	25 - 255	128
922 A	962 A	1002 A	Speed step where flange squeal is activated	0 - 127	16
923 A	963 A	1003 A	Speed step where flange squeal stops	0 - 127	48
924 A	964 A	1004 A	Special function with external input for Diesels and Electrics that allows flange squeal to be deactivated Values 0-28 are assigned to Functions F0 to F28 Value 31 = Flange squeal always active	0 - 28 31	31
925 A	965 A	1005 A	CV 926-A special function delay time is deactivated Values 0-28 are assigned to Functions F0 to F28 Value 31 = no deactivation	0 - 28 31	31
926 A	966 A	1006 A	Start-up delay in 32millisecond increments (30 = 1 second, 254 = 8,13 seconds 0 = 0 seconds, 255 = off (delay until start-up))	0 - 254	255
927 A	967 A	1007 A	Steam loco start-up delay when activated by acceleration	5 - 20	5
928 A	968 A	1008 A	Steam loco start-up delay when activated by load	5 - 20	5
929 A	969 A	1009 A	Steam output (SA1) when stopped and Sound is on	0 - 100 %	20
930 A	970 A	1010 A	Steam output (SA1) when running and Sound is on	0 - 100 %	80
931 A	971 A	1011 A	Steam output (SA1) when idling and Sound is on	0 - 100 %	35
932 A	972 A	1012 A	Steam output (SA1) during start-up when Sound is on During the delay (CV 926 A), the smoke unit is heated at this value	0 - 100 %	100
The following settings are for automatically-triggered sounds when the loco starts					
933 A	973 A	1013 A	Delay time for automatically triggering Sound function 16 (Short whistle blast) 0 = always, 255 = never	0 - 255	255
934 A	974 A	1014 A	Delay time for automatic Sound function 99 (Steam hiss during start-up) 0 = from 1 second, 255 = never	0 - 255	90
Subsequent settings for dynamic Sound reactions					
935 A	975 A	1015 A	Decoder recognizes „faster“ setting	120 - 138	131
936 A	976 A	1016 A	Decoder recognizes „slower“ setting	120 - 138	125
937 A	977 A	1017 A	Sensitivity to load changes 1 = Reacts quickly to 8 = reacts slowly	1 - 8	6
938 A	978 A	1018 A	Parameter setting when motor load increases 128 = Tone change is deactivated when load increases	0 - 128	3
939 A	979 A	1019 A	Parameter setting when motor load decreases 128 = Tone change is deactivated when load decreases	0 - 128	3

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PIKO Spielwaren GmbH
Lutherstr. 30
96515 Sonneberg



46190 PIKO Sound Module for all modern electric railcars*

*with SUSI-interface



Features

- Intelligent Sound Control with 7 minutes of prototype sounds that adjust to any operating situation
- Prime mover sound, brake squeal, and various randomly-activated sounds in stationary mode (i.e. air compressor)
- Adjustable sounds like Horn, Bell, Coupler Clank, Automatic Door Signal, etc.
- Adjustable load-sensitive sounds that react to uphill or downhill movement
- Smart-Start-Function: The Sound Module keeps the unit from moving until the sound function is synched with the unit's motor.
- Adjustable volume and audio muting: sound can be faded or muted using a function key
- Provision for connection to a wheel sensor or reed contact
- M.U. Control for up to three other DCC-equipped units in the same consist
- Speaker and speaker housing
- Programable with additional sounds from the Uhlenbrock website (www.uhlenbrock.de)

Description

The PIKO #46190 Sound Module is an auxiliary Sound Module for PIKO N-Scale EMUs that are equipped with SUSI DCC Interfaces. It is NOT a replacement for a DCC decoder; it is an accessory for it.

The Sound Module allows a SUSI-equipped, non-sound DCC decoder to have sound functions added to it. When installed, your model will feature prototypical sound like any other DCC sound-equipped model. The module's intelligent sound control matches its recorded sound to the operating situation of your model. For example, when your model is running on an uphill section, the prime mover sound will intensify. When your model comes to a stop, the brakes squeal and the prime mover returns to idle. Intelligent sound control activates random train sounds while your model is in idle; like an air compressor or relief valve. In addition to your model's running sound (which can be switched on and off using a function key), up to three additional sounds can be activated using function keys. Depending on your model, these additional sounds are horn, bell, automatic door signal, or couple/uncouple.

The Sound Module's "mute" function allows you to fade-out audio when the model enters an unseen portion of your layout, and fade-in the audio as the model returns to a visible portion of the layout.

Installing the Sound Module

- If your model's decoder is already equipped with a microSUSI interface (like PIKO #46401), you can insert the Sound Module's microSUSI plug into the microSUSI socket of the decoder. Make sure you orient the plug correctly.
- If your model's decoder does not feature a microSUSI interface, you can still connect the Sound Module to the decoder via the soldering pads on the decoder's PCB board (see illustration on right). First cut the microSUSI plug from it's wires; then solder the module's red/blue/gray/black wires to the PCB board according to the decoder's instruction manual. Your model's decoder will now supply the Sound Module with operating voltage and DCC data.

PIKO #46211 PluX12 decoder
(for illustration)



red
blue
grey
black

Installation

When placing the Sound Module into your model, make sure there are no crossed or pinched wires, and that the model's shell rests properly on the chassis. Crossed/pinched wires can lead to a short circuit!

A short circuit in the motor, lights, or wheelsets can destroy the Sound Module and the model's electronics!

Technical data

Sound channels for playback:	4
Power consumption:	max. 0,16 A
Size: Module	18 x 11 x 5 mm,
Loudspeaker	19,5 x 13,5 x 4 mm

Hotline: Your direct way to the technician

If you have any questions, please call Uhlenbrock: 02045-858327, Mon-Thu-Fri 14-16 h and Wed 16-18 h

Sound activation/deactivation

PIKO Sound Modules feature various user-activated sounds and a mute function. The PIKO Sound Module is factory-configured to the settings in the table below:

Default assignments	Sound type	Sound number
Special function F1	Engine sound	3
Special function F2	Bell or Horn #2	1
Special function F5	Whistle or Horn #1	2
Special function F6	Coupler sound/Door sound	4
Special function F8	Mute function	8
Special function F9	Conductor's whistle, short	5
Special function F11	Air compressor	15
Special function F 13	Departure announcement	11
Special function F14	Automatic door signal	14
Special function F16	Conductor's whistle, long	12
Special function F17	Pantograph raise/lower	9

Each sound can be switched on or off from your DCC control center using function keys. Sound functions can be mapped to different function keys using CVs 903 to 931. In addition, the mute function can be mapped to a different function key by re-assigning special function 8. Special function 8 is particularly useful when your model leaves the visible trackage of your layout and you wish to fade-out its sound, or, to fade-in the sound once the model returns to visible trackage.

Volume

Playback volume can be changed using CV 902.

Dynamic sound change settings

Some CVs that affect the change of sound in regard to the model's speed can be programmed based on what model the Sound Module is used in. These settings determine the change of sound as the load changes (uphill and downhill), the speed threshold that activates the brake squeal, and the speed threshold for the engine room fan in an electric locomotive.

CV 925 changes the load sensitivity. If you enter a value of 1 here, the prime mover sound reacts quickly to uphill or downhill runs. A value of 8 causes a delayed reaction. CV 921 triggers the threshold for sound change when going uphill. CV 922 triggers the threshold for sound change when going downhill. Reaction to these CV values will vary by the type of decoder used, so test runs must be conducted after the Sound Module is installed to determine what CV values you are satisfied with.

Connecting multiple Sound (or special function) Modules to one decoder

Up to three Sound or special function Modules can be installed on one decoder with a SUSI interface. Each module must be assigned its own CV address range via CV 897 so that the individual modules can be programmed separately. To do this, you first connect the modules to the locomotive decoder. Now the modules can be assigned their own CV address ranges of 1, 2, or 3 (via CV 897). When all the modules are connected together, each module can be selected and programmed using its own CV address range. The various CV numbers that correspond with their CV address range are listed in the CV Table. Please note that the CV setting descriptions in the previous sections refer to address range 1: If you change the address range, you must use the corresponding CV addresses for the 2nd or 3rd address range from the CV Table.

Warranty Statement

Each Sound Module component is factory-tested for functionality before shipment. Nevertheless, should a defect appear within 2 years of the purchase date, we will repair the Sound Module for you free of charge. In the event of a defective module, please send the module back to us for repair together with the proof of purchase and a brief description of the problem. Please note that according to the EMC (German Electromagnetic Interference Law), the Sound Module may only be used in models bearing the CE logo.

Programing

Configuration Variables (CVs) developed using international DCC standards form the basis for all settings on the decoder. The PIKO Sound Module is programmed via the model's decoder using any DCC protocol that the model's decoder recognizes. You can program a PIKO or Uhlenbrock** decoder with any common DCC or Motorola command station that supports programming up to CV 1024.

**For third-party decoder manufacturers, please refer to the programming instructions in the owner's manual for the locomotive decoder.

CV Table (Configuration Variables)

CV Adr. Range 1	CV Adr. Range 2	CV Adr. Range 3	Description	Range	Default Setting
897	897	897	SUSI Address Range 1 = from 900 to 939 2 = from 940 to 979 3 = from 980 to 1019	1 - 3	1
900	940	980	Manufacturer I.D.	-	85
901	941	981	Software version	-	varies
902	942	982	Sound volume	50 - 200	192
903	943	983	Function-activated Sound Number "x" (x = CV value) x = 0 No sound is activated x = 1 Bell or Horn #2 x = 2 Whistle or Horn #1 x = 3 Engine sound x = 4 Coupler sound or door x = 5 Conductor's whistle (short) x = 6 Station announcement / Blank x = 8 Activate/Mute all sound functions x = 9 Pantograph raise/lower x = 11 Departure announcement x = 12 Conductor's whistle (long) / Blank x = 14 Automatic door signal x = 15 Air compressor x = 16 Warning tone x = 17 Blow-down / Blank x = 18 Firebox grates / Blank x = 95 Smoke generator always on x = 96 Smoke generator always off x = 97 Brake squeal deactivated by Function x = 98 Manual engine fan (electric loco) by Function x = 99 Manual steam hiss (steam loco) by Function x = 200 Blank Sound x = 201 Blank Sound x = 202 Blank Sound x = 203 Blank Sound	0 - 18 95 - 99 200 - 203	0
904	944	984	F1-activated Sound Number x Value for x corresponding to CV903/943/983	see above	3
905	945	985	F2-activated Sound Number x Value for x corresponding to CV903/943/983	see above	1
906	946	986	F3-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
907	947	987	F4-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
908	948	988	F5-activated Sound Number x Value for x corresponding to CV903/943/983	see above	2
909	949	989	F6-activated Sound Number x Value for x corresponding to CV903/943/983	see above	4
910	950	990	F7-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
911	951	991	F8-activated Sound Number x Value for x corresponding to CV903/943/983	see above	8
912	952	992	F9-activated Sound Number x Value for x corresponding to CV903/943/983	see above	5
913	953	993	F10-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
914	954	994	F11-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	15
915	955	995	F12-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
916	956	996	F13-activated Sound Number x Value for x corresponding to CV903/943/983	see above	11
917	957	997	F14-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	14
918	958	998	F15-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	0
919	959	999	F16-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	12
920	960	1000	F17-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	9
921	961	1001	F18-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	0
922	962	1002	F19-activated Sound Number x Value for x corresponding to CV903/943/983	see above.	0
923	963	1003	F20-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
924	964	1004	F21-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
925	965	1005	F22-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0
926	966	1006	F23-activated Sound Number x Value for x corresponding to CV903/943/983	see above	0