SUSI - Bank (CV 1021)	CV	Description	Value Range	Factory default
4	918	Volume - Station Announcemen	0 - 255	150
	919	Volume - Oiling the Side Rods	0 - 255	150
	920	Volume - Heavy Load Sound	0 - 255	130
	921	Volume- Light Switch Train Light	0 - 255	100
	922	Volume - Clickety-Clack	0 - 255	255
	923	Volume - Curve Squeal	0 - 255	255
	924	Volume - Rail Creaking	0 - 255	60
	925	Volume - Light Switch Cab Light	0 - 255	100
	926	Volume - Break Squeal	0 - 255	150
	927	Volume - Direction Switch	0 - 255	50
	928	Volume - Light Switch Chassis Lights	0 - 255	100
	929	Volume - Light Switch Lighting for driver's desk	0 - 255	100
8	900 - 931	Function key assignment (function mapping) of the individual sounds		
	900	Function key - Motor	0 - 28	1
	901	Function key - Horn	0 - 28	2
	902	Function key - Battery Main Switch	0 - 28	9
	903	Function key - Cab Door	0 - 28	16
	904	Function key - Cab Window	0 - 28	17
	905	Function key - Windshield Wipers	0 - 28	21
	906	Function key - Switching Gear	0 - 28	7
	907	Function key - Hand Brakes	0 - 28	12
	908	Function key - Compressor	0 - 28	11
	909	Function key - Preheater	0 - 28	10
	910	Function key - Sanding	0 - 28	14
	911	Function key - Radio Chatter 1	0 - 28	22
	912	Function key - Radio Chatter 2	0 - 28	23
	913	Function key - Coupling	0 - 28	13
	914	Function key - Engine Room Door	0 - 28	15
	915	Function key - Radiator Grill Open/Shut	0 - 28	20
	916	Function key - Oil separator	0 - 28	19
	917	Function key - Fuel Pump	0 - 28	18
	918	Function key - Station Announcement	0 - 28	8
	919	Function key - Oiling the Side Rods	0 - 28	24
	921	Function key - Light Switch Train Lighting	0 - 28	3
	922	Function key - Clickety-Clack	0 - 28	25
	923	Function key - Curve Squeal	0 - 28	26
	925	Function key - Light Switch Cab Light	0 - 28	4
	928	Function key - Light Switch Chassis Lights	0 - 28	5
	929	Function key - LLight Switch Lighting for driver's desk	0 - 28	6

#36233 PIKO Sound module with loudspeaker for BR 106 G

The Sound module with loudspeaker for all PIKO loco decoders with SUSI Interface

PIKO
MODELLBAHNEN & GEBÄUDEMODELLE

1. Characteristics

• Intelligent Sound control with 480 second Sound buffer
• High-resolution Sound: 22050Hz Samplerate, 12bit
• Efficient output final stage for 4-8 Ohm loudspeaker
• Generates the operating sounds of the locomotive and brake squeal
• Sound is specially adjusted to the body of the locomotive for best resonance
• Simultaneous rendition of 8 independent sound channels
• Additional adjustable sounds like e.g. horn, sanding, or own custom sounds
• Function Mapping up to f 28
• With smart start function: The Sound module stops the locomotive decoder, when starting until the vehicle's engine synchronize with the sound.
• Separate adjustable volume for almost all sound events (only DS4)
• Muting with fade in and out function
• Volume control via potentiometer
• Analogue operation with start-up and shut-down noises, when used with a suitable decoder

2. Description

The PIKO Sound module provides digital original sounds from the original locomotive with a resolution of 12 Bit and a sampling rate of 22,05 kHz. The intelligent sound control adapts the sounds to the respective driving situation. For example, when driving uphill or downhill, the sounds are reproduced according to the current engine load. If the driving noise is switched on via a function key, the upgrade phase of the locomotive can be heard first. If the locomotive is to start up, the sound module stops the locomotive engine until the vehicle starts up synchronously with the sound. If the locomotive is stopped, the train brake squeals.

If the driving noise is switched off when the locomotive is stationary, a corresponding dismantling phase can now be heard, including the closing of the door when the driver leaves the driver's cab. Thanks to the 8-channel technology, the locomotive's driving noise and other locomotive-specific noises can be switched on simultaneously using special function keys. These are horn, sanding and other additional noises, depending on the type of locomotive. These can be called up using the function keys F0 - F28. If the locomotive leaves the visible area of a model railway system, e.g. into the staging yard, the "Sound off" function can be used to softly fade out the entire locomotive sound using the special function key. Nearly all sounds are separately adjustable in volume via CV programming and can be assigned to any special function key up to F28.

In combination with a correspondingly suitable locomotive decoder the IntelliSound 4 module can even be in analogue mode with start-up and shut down sounds.

3. Installing a Sound Module

SUSI interface
Insert the SUSI plug into the SUSI socket of your decoder. The sound module is supplied with power and data from the decoder.

Loudspeaker
Install the speaker in the bracket provided in the locomotive (see operating instructions for the locomotive, page 13) and connect the speaker cables to those of the sound module.

Fastening the Sound module into the Vehicle
Using the double sided adhesive pad provided, affix the decoder to the desired location in the locomotive. The adhesive pad protects the decoder from coming in contact with conducting surfaces and holds it in place.
Please note that according to the EMV laws the component may only be operated in vehicles that carry the CE symbol.

Start-up
Double check the correct installation with a continuity tester or an Ohmmeter.
When placing the device make sure it does not come into contact with any conducting surfaces in the vehicle. Also ensure that a shot circuit cannot occur when the locomotive is close, and that the wire is not cinched.

A short circuit can destroy the component and eventually the locomotive electronics!

4. Switching the Sound on and off

The individual sounds can be switched on and off via special function keys from the digital control panel. The assignment of the sounds to the special function keys can be changed via the CVs 900 to 931 in the SUSI bank 8 (CV1021 = 8).

Table of function keys*

F - Key	Type of Sound	Soundslot	CV	Value
f0				
f1	Motor	1	900	1
f2**	Horn	2	901	2
f3				
f4				
f5				
f6				
f7	Switching Gear	7	906	7
f8**	Station Announcement	19	918	8
f9**	Battery Main Switch	3	902	9
f10	Preheater	10	909	10
f11	Compressor	9	908	11
f12	Hand Brakes	8	907	12
f13	Coupling	14	913	13
f14**	Sanding	11	910	14
f15	Engine Room Door	15	914	15
f16	Cab Door	4	903	16
f17	Cab Window	5	904	17
f18	Fuel Pump	18	917	18
f19**	Oil separator	17	916	19
f20	Radiator Grill Open/Shut	16	915	20
f21	Windshield Wipers	6	905	21
f22**	Radio Chatter 1	12	911	22
f23**	Radio Chatter 2	13	912	23
f24**	Oiling the Side Rods	20	919	24
f25	Clickety-Clack	23	922	25
f26	Curve Squeal	24	923	26
f27	Mute			

* Loco decoder and digital command station must support functions till F28.

** key is a momentary function

Volume
The total volume can be changed either via the potentiometer or in the SUSI bank 2 (CV 1021 = 2) via the CV 900.
Therefore the CV 1021 is first programmed to the value 2 and then the CV 900 is programmed to the value of the desired volume.

The individual sounds of the sound decoder are stored into so-called slots, of which up to 32 are available. The volume of the individual sounds can be adjusted via the CVs 900 - 931 in the SUSI bank 4 (CV 1021 = 4). Therefore, first the CV 1021 is programmed to the value 4 and then the CV belonging to the respective sound (900 - 931) to the value of the desired volume.

Setting the dynamic Characteristics of the Sound
Some sound characteristics change according to current running state of the vehicle and can be adapted to the type of locomotive being used. All factory default values for PIKO locomotive decoders are usable with H0 Locomotives, but can be changed to suit other locomotives without problems.

5. Programming
In the factory default state all decoder options are changed using configuration variables (CVs) according to the DCC Stopard. The sound module can be programmed with SUSIkomm software and Sound Loading Adapter, or via the locomotive decoder. The decoders can be programmed by an Intellibox, DCC Centre and Motorola Centre. With other makes of locomotive decoder follow the instructions for that decoder.

Programming with DCC devices
Use the programming menu in your DCC Centre to program the decoder CVs in either register, direct CV or page programming mode. It is also possible to program the decoder on the main line using a DCC Centre. Refer to the manual of your control centre for full instructions on the process.

Technical Data

Sound channels for reproduction:	8
Maximum duration of stored sounds:	480 Sec.
Sound resolution:	12 Bit
Samplingrate:	22,05 kHz
Output power:	2,5 Watt
Power usage:	up to 160 mA
Dimensions:	24,6 x 15,3 x 3,6 mm
Speaker Impedance:	8 Ohm

Table of CVs (Configuration Variables)

SUSI - Bank (CV 1021)	CV	Description	Value Range	Factory default
0	900	**Manufacturer ID**	-	162
	901	**Version number**	-	different
	902	**Reset**	0, 1	0
1	900	Hardware ID	-	16
	901	Version number	-	different
2	900	otal volume	0 - 255	250
	905	Minimum random time	0 - 255	20
	906	Maximum random time	0 - 255	40
	910	Function key "Mute"	0 - 28	27
	912	Track number of the station announcement	0 - 10	1
3	900 - 928 929 - 939	Speed step thresholds for switching noises, linear in steps of 9	0 - 255	0 - 252 255
4	900 - 931	Volume settings of the individual sounds		
	900	Volume - Motor	0 - 255	180
	901	Volume - Horn	0 - 255	250
	902	Volume - Battery Main Switch	0 - 255	150
	903	Volume - Cab Door	0 - 255	180
	904	Volume - Cab Window	0 - 255	150
	905	Volume - Windshield Wipers	0 - 255	150
	906	Volume - Switching Gear	0 - 255	200
	907	Volume - Hand Brakes	0 - 255	180
	908	Volume - Compressor	0 - 255	180
	909	Volume - Preheater	0 - 255	170
	910	Volume - Sanding	0 - 255	100
	911	Volume - Radio Chatter 1	0 - 255	150
	912	Volume - Radio Chatter 2	0 - 255	150
	913	Volume - Coupling	0 - 255	130
	914	Volume - Engine Room Door	0 - 255	180
	915	Volume - Radiator Grill Open/Shut	0 - 255	180
	916	Volume - Oil seperator	0 - 255	120
	917	Volume - Fuel Pump	0 - 255	170