SmileSound

SmileSound User's Manual

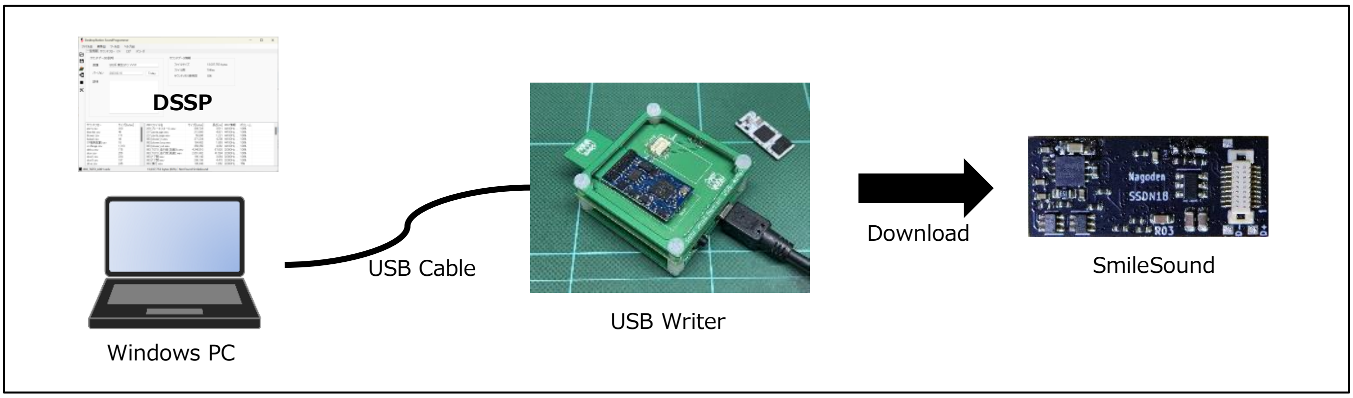
Rev 0.54 / 20251002

gist

In order to realize an open DCC sound environment, Desktop Station Co., Ltd. and the DCC Electronics Alliance have jointly developed and provided an NMRA-compliant DCC sound decoder called SmileSound. This sound decoder is designed in Japan and has been taken into account so that users can freely program and modify Japan's railway sounds. Compared to sound decoders from overseas manufacturers, we actively incorporate functions and performance that meet the needs of Japan to improve usability.

This book introduces how to handle the decoder, how to use the software, and how to create sound data necessary to use SmileSound.

If you have any questions, please post them on the Digital Model Railroad Forum (https://desktopstation.net/bb/), and we will reflect the contents when this manual is revised and update it to a better manual.



Products Supported by this Manual

- SmileSound Mini Next18 (Developer: Nagoden/DesktopStation)
- SmileSound Standard R2 MTC21 (Developer DesktopStation)
- SmileSound Slim USB (Developer: Nagoden/DesktopStation)
- SmileSound Zslim / K3066 Sugar Rabbit (Developer: Nagoden/DesktopStation)
- SmileSound Sound Development Board (Developer: Nagoden/DesktopStation)
- DSSP (Developer DesktopStation)
- USB writer (developer SmileWorks/DesktopStation)

Desktop Station Co., Ltd
. Nerima, Tokyo, JAPAN

Desktop Station

USER'S MANUAL

table of contents

1.Introduction at first

The Smile Sound Decoder is a DCC sound decoder for automotive applications that is designed and developed in Japan and complies with the NMRA DCC standard that can be used universally.

By using a script called Soundflow, you can write sound programming, including controlling locomotive behavior and lights. By having a proprietary interpreter sound engine that can execute sound flow in parallel, it is possible to realize the behavior and expression of various railway locomotives, contributing to the creation of expressive sound models.

In addition, we have introduced a mechanism that allows sound flow to operate without DCC so that LEDs and sound movements can be expressed not only in locomotives but also in structures such as buildings. SmileSound can be used not only for model trains, but also for layouts, dioramas, etc.

It has the following characteristics.

- Sound decoder using high-performance MCU and 128Mbit FLASH memory
- Equipped with a simple, simple, and high-performance interpreter engine, up to 16 user-defined programs can be executed simultaneously. Realization of sound programming that can express state transitions
- Supports up to 10 simultaneous sounds, 32kHz 16-bit playback. It also supports 16kHz and 8kHz sample rates and 8-bit audio to contribute memory-saving support.
- Standard installation of DCC-related technologies such as RailCom (BiDi) and other DCC-related technologies that are becoming more popular worldwide
- Fast firmware sound data update via USB via dedicated adapter
- Provides users with a vast library of Japan-style sound data free of charge
- Support for command stations from other companies other than DesktopStation

Sound Data for SmileSound (https://desktopstation.net/smilesound/index.php?SoundData)As of Oct 2025, you can easily download more than 250 types of Japan-style sound data from our website at any time, write them to SmileSound, and use them using your PC. You can also customize it by reading this manual.

As soon as it arrives, SmileSound has written sound data for operation testing. Choose your favorite sound data and write it down. How to use it is introduced in this manual.

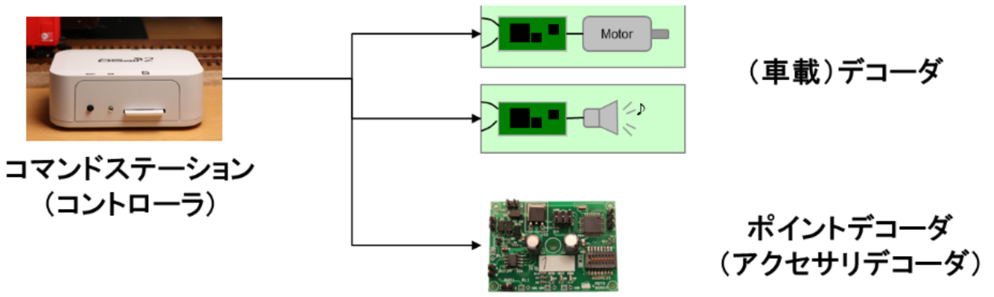


Figure 1.1 Positioning of SmileSound

2.Precautions and Prohibitions

Please observe the following precautions and prohibitions and use SmileSound appropriately. If you do not observe the following, you risk injury or harm to your health. You or the management of the device are responsible for its use.

⚠	Do not use in outdoor use, chemicals, liquids, high humidity, oil, dust, sealing, environments with flammable or flammable substances, or in high or cryogenic environments
⚠	Do not use in an environment that uses medical devices or other equipment that poses a risk of affecting the human body. There is a risk of malfunction due to the harmonic noise contained in the DCC.
⚠	When mounting, insulate wires, conductive parts, and exposed parts. Insufficient insulation work may cause destruction, damage, or failure of the locomotive.
⚠	There is a risk of short circuit, electric shock, smoke, capacitor rupture. Do not touch rails, wiring, conductive parts of the locomotive, wheels, etc. while energized.
⚠	Use only with products that comply with the Digital Command Control (DCC) specification
⚠	Age of use is 13 years or older. Use by infants and children must be under the supervision and responsibility of a parent or guardian
⚠	In the event of abnormal noise, odor, or smoke, stop using it immediately and request repairs from the manufacturer. No continued use.
⚠	Comply with the operating voltage and current range. To be used in the range of DC12-18V. Use a genuine power adapter with the PSE mark that is approved for use in Japan. Use a power adapter with a voltage that matches the specifications of the scale, locomotive, and decoder.
⚠	Always be monitored by the user during power on/use. Regardless of whether the power is turned on or not, it is prohibited to leave the command station with the AC adapter connected, and to operate unmanned or unmanned. When leaving the equipment, disconnect the AC adapter from the outlet so that the command station does not turn on and power cannot be supplied to the locomotive.
⚠	It is prohibited to use it in applications that require long-term continuous operation, high durability, and stable operation in business and industry, as well as in aviation, space, and military.

3.Warranty Provisions

[Warranty terms for SmileSound decoders are listed here]

1. Warranty Coverage

We warrant the products described in this document.

2. Warranty period

The warranty period is one year from the date of purchase. In addition, paid repairs and replacements are for 1 year from the date of purchase.

3. Warranty

If a defect occurs due to a defect attributable to the Company within the warranty period, we will replace or repair it with a substitute free of charge. If the warranty period has passed, you will be charged.

If the sale of the product is no longer available, we may replace it with a replacement product. If you want to get a warranty, please contact the store where you purchased it. Purchases made from the Desktop Station Online Store are available at the Desktop Station Online Store.

4. Paid repair and replacement

Even within the warranty period, if the following items apply, it will be repaired or replaced for a fee.

・If you do not present information proving the place of purchase and the date of purchase (order email, order number, delivery note, receipt, etc.)
・Defects or malfunctions caused by installation work by the user or processor (e.g., short circuit failure due to insulation defects during installation, faults due to incorrect wiring, derailment, contact with conductive materials, etc.)
・Defects when used for applications that exceed the performance of the product indicated (e.g., HO products used for G gauge, No. 1 gauge, etc.)
・Aging of the product or parts (wear and tear due to use, etc.), deterioration over time, or other defects associated with these
・Factors caused by the environment of the storage and loading location. Dust, hair, pet hair, dust, high temperature and humidity, condensation, corrosion or other defects
・Specifications related to the material properties of the product or component (processing of board end faces, connectors, etc.)
・Defects caused by natural disasters or other force majeure (e.g., storms, storms, earthquakes, lightning strikes, floods, land subsidence, fires, etc.) or in the event of a situation where the performance of the product exceeds the performance of the product.

- Defects caused by incorrect operation, poor adjustment, or failure to perform proper maintenance (e.g., cleaning of wheels and rails, maintenance of command stations, etc.)

・Defects caused by the user's own installation, repair, or modification (including installation and removal of necessary parts)

・Use for business applications (e.g., museum dioramas) or industrial applications (factories, museums, museums, event venues) that require operation in severe conditions such as long or long periods of time, continuous operation, frequent stops, and driving.

5. Subject to repair and replacement

If the following items apply, you will not be eligible for warranty, paid repair, or paid replacement.

・If you want to receive warranty or paid repairs at a store other than the store where you purchased it.

・When obtained through illegal acts such as crimes

・When purchased or received by means other than our company or our agents.

- When a competitor or individual purchases or modifies the product for analysis

・When products intended for Japan are used overseas

・When using firmware other than the firmware provided by the Company

・Imitation of our products, products modified without our permission

・When used for business or industrial purposes without a paid business support contract, whether indirectly or directly with our company.

・If it is sold as junk and purchased.

6. Revision of Warranty Provisions

This warranty is subject to change without notice.

4.Hardware and software used

The hardware and software intended for use in this manual are listed below.

Table 4.1 List of hardware used

hardware	
Computer (Windows 10 or later) *We do not guarantee the operation of the Mac emulation function.	
USB cable (For A-Mini B, USB Writer Rev.1) USB cable (for A-C, USB writer Rev.2)	
USB Writer (75018)	
Decoder Tester (LaisDcc860033, ESU53900) Either ESU or LiteraisDcc. We do not support your own work. If you use your own work, you will not receive support, so please use it at your own risk.	
SmileSound decoder Such as Mini Next18 (75019) or Standard MTC21 (75017)	
DSair2 and DSairLite (command station) *Used for operation checks, etc.	

Table 4.2 List of Software Used

software	remarks
DSSP (7 chapters)	Write to SmileSound and use it for sound data editing [Where to get] https://desktopstation.net/smilesound/index.php?SoundProgrammer
WAVE File Editing Tool	Audacity, etc. [Where to get] https://www.audacityteam.org/
Text editor	Sakura Editor, Visual StudioCode, etc. [Where to get] https://sakura-editor.github.io/

5.SmileSound decoder

5.1.Introducing the SmileSound Decoder

SmileSound is a Japan-designed sound decoder developed by volunteers from Desktop Station Co., Ltd. and the DCC Electronic Crafts Union as the ideal form of a Japan-style DCC sound decoder.

Sales began in January 2023. We define the concept of decoder functions and specifications that are easy to adapt to Japan-style sound data from scratch, and design and develop everything including software and hardware with the participation of engineers who are familiar with general industry and home appliances. SmileSound realizes DCC sound using technology in Japan on a zero basis without using any overseas sound decoder technology.

SmileSound-compatible decoders currently offer the following types: The significant differences between these types are shown in Table 5.1. As shown in 1, the board shape and AUX are in the motor output. This is due to the size of the scale and its application.

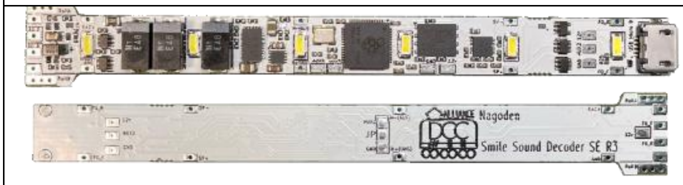
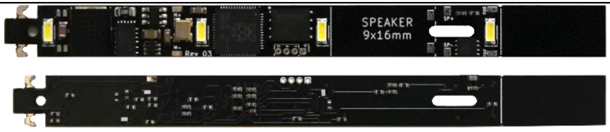
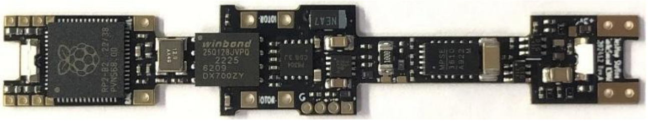
75017 SmileSound Mini Next18 Developed for N Gauge	75046 SmileSound Standard R2 MTC21 Developed for HO, No. 16, J Gauge
	
75026 SmileSound Slim USB N gauge with integrated interior light (GreenMax locomotives) for HO	75022 Sound Development Board Substrate for the development of sound data. Direct connection with a PC is possible.
	
75028 SmileSound Zslim Integrated interior light for Z gauge	75038 SmileSound K3066 Sugar Rabbit For KATO locomotives

Figure 5.1.1 SmileSound decoder series

Table 5.1.1 Functional differences between SmileSound decoders

item	Mini Next18	K3066	Standard R2 MTC21	Slim USB
Compatible Connectors	Next18	3066 locomotives	MTC21	USB
Motor output (instantaneous)	0.7Amax	1.0Amax	1.5Amax	1.5Amax
Motor Output (Continuous)	0.5A	0.5A	1.0A	1.0A
Usable pads	without	And	And	And
Size [mm]	10.5x25	10x60x2.4	16x30	100x13x3.6
Working voltage				
AUX Usage	Up to AUX4	Up to AUX4(L)	Up to AUX6	Up to AUX2
Capacitor load	small	small	Approx. 220uF	300uF
External Capacitor Requirements	Specify electrolytic or polymer capacitors[1]			—
External Capacitor Required Capacity	Minimum 200uF. Recommended 400uF	Minimum 220uF.	unnecessary	unnecessary

[1] Ceramic capacitors are deprecated due to their reduced capacity due to DC bias characteristics.

5.2.Specification

The feature specifications supported by SmileSound are listed below.

Table 5.2.1 SmileSound Specifications (Common)

Supported Protocols	NMRA DCC (with RailCom Cutout)
SpeedStep	14, 28, 128
Function	F0-F32, Compliant with New 2022 Specification
Asymmetrical DCC	Asymmetrical DCC not supported (automatic braking function not supported)
CV Method	Direct, OPS/POM (RailCom linkage function is planned in the future)
Motor PWM	32kHz (configurable and configurable)
Line voltage	12V~16V (recommended), up to 21V
AUX output	**Headlight and Taillight, AUX1-2:** Power, open collector output, 100mAmax **AUX3-6 (Mini Next18 AUX3-4):** Logic, 3.3V CMOS output. If you want to connect lights, etc., you need to convert it to power output.
Sound memory	120Mbit(15MB)
Sound Output Specifications	32/16/8kHz 16bit/8bit.
Speaker capacity	3Wmax, 4-32Ω
Number of simultaneous sounds	12 notes (2 of which are steam sounds only)
User changes to sounds	Support with dedicated tools. Unique script method.
Firmware Capacity	8Mbit(1MB)
analog operation	Not supported (no plans to respond)
Servo function	Considering correspondence
SUSI	Not supported (no plans to respond)
RailCom(BiDi)	support
Safety and Protection Features	Motor output protection (over-temperature, over-current, over-voltage, under-voltage) ・Speaker output protection (short between speaker wiring, short between output ~ GND only) • Power protection (overheat, low voltage, soft start)

5.3.Support CV

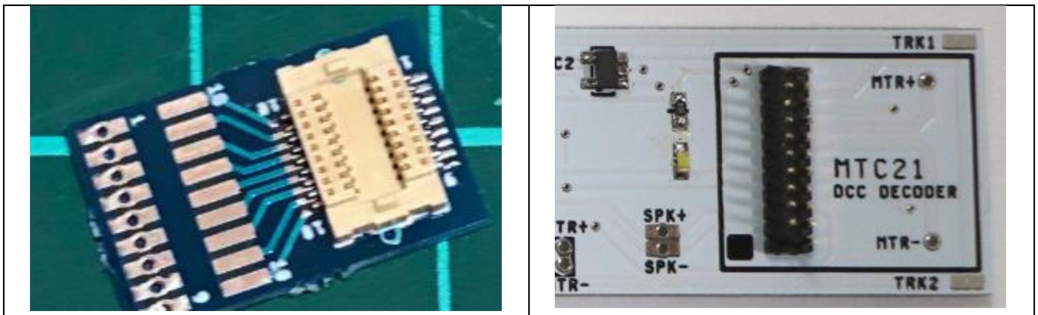
See 89 page.

5.4.DCC Connector

5.4.1.What is a DCC connector?

SmileSound supports two DCC connectors: Next18 and MTC21. It is rarely adopted by domestic model manufacturers, but it is widely used overseas.

The SmileSound Mini Next18, as the name suggests, is compatible with the Next18 connector. The Standard MTC21 is also compatible with the MTC21 connector. Other standards include NEM652 (NMRA8-pin) and PluX.



Next18 connector example

MTC21 Connector Example

Figure 5.4.1.1 Example of SmileSound Compatible Connectors

5.4.2.Next18

Next18 connectors are DCC connectors that are mainly used for N gauge. A board-to-board connector is used, and the pinout is designed to prevent failure even when plugged back.

Although there is no track record of adoption of model trains in Japan, it is widely adopted mainly by European model manufacturers. TRAINO (https://traino.jpn.org/) sells mounted auxiliary boards for Japan model train locomotives, so by using these, the threshold for DCC conversion of N gauge is relatively low.

Below you will find the pinout of the Next18 connector.

Table 5.4.2.1 Next18-S Standard Pin Assignment

Assigned terminals	Pin Number		Assigned terminals
Line A	9	10	Line A
Headlight (P)	8	11	Motor Output-
Speaker+	7	12	AUX2(P)
COM+	6	13	AUX4(L)
GND	5	14	GND
AUX3(L)	4	15	COM+
AUX1(P)	3	16	Loudspeaker-
Motor Output+	2	17	Taillight (P)
Line B	1	18	Line B

(P): Power output (open collector), (L): Logic output CMOS 3.3V

5.4.3.MTC21

The MTC21 connector is a DCC connector that is mainly used for HO and No. 16. The connector features a general-purpose 2x11 1.27mm pitch pin header, but instead of using the 11th pin, called the INDEX pin, it can be mounted as a landmark. In addition, the decoder side has a structure that seems to be an integrated pin frame and a board, as shown in Fig. 5.4.3.As shown in 1, it is inserted through a hole in the board from above.

It uses thicker pins than the Next18 connector, so it can withstand the high current of the HO.

Table 5.4.3.1 MTC21 Standard Pin Assignment

Assigned terminals	Pin Number		Assigned terminals
Sensor 1/AUX7(L)	1	22	Line A
Sensor 2/AUX8(L)	2	21	Line B
AUX6(L)	3	20	GND
AUX4(L)	4	19	Motor Output+
—	5	18	Motor Output-
—	6	17	AUX5(L)
Taillight (P)	7	16	COM+
Headlight (P)	8	15	AUX1(P)
Speaker+	9	14	AUX2(P)
Loudspeaker-	10	13	AUX3(L)
No Pins	INDEX	12	VCC(3.3V)

(P): Power output (open collector), (L): Logic output CMOS 3.3V

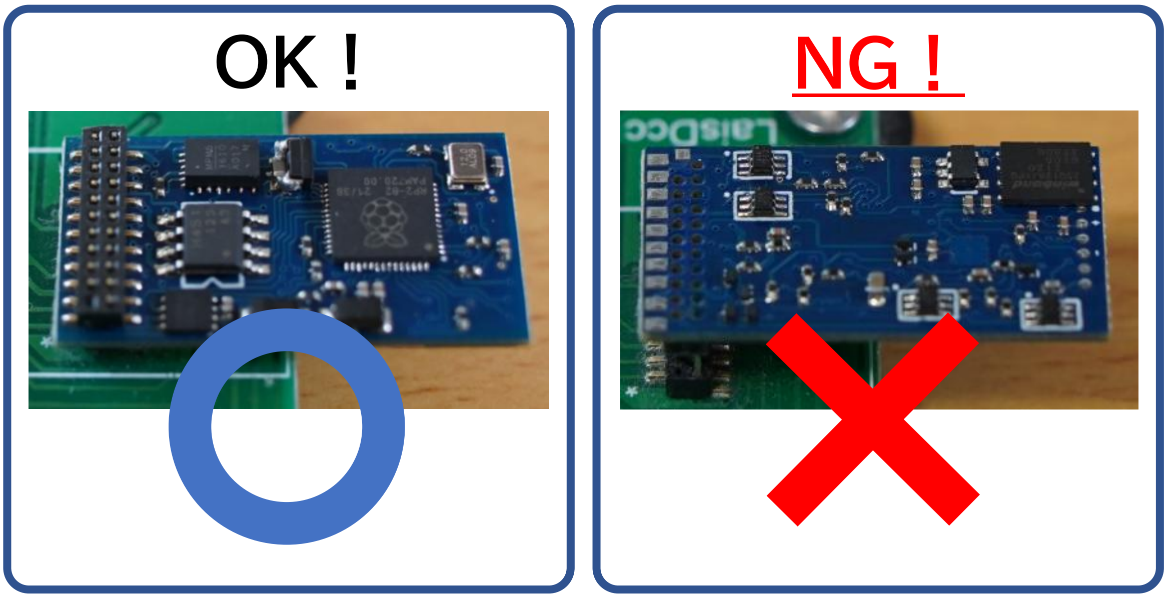


Figure 5.4.3.1 How to Use the MTC21 Connector

5.4.4.PluX

Conversion to the PluX standard, which is supported by European locomotives, is deprecated due to the complexity of the structure and wiring. The design is designed with connectors shared by the N-gauge standard and the HO standard.

5.4.5.NEM651 6-pin

Some N-gauge locomotives in Europe have a 1.27 mm pitch 6-pin connector. SmileSound does not support this, so please create your own adapter to convert from Next18 to 6-pin.

5.4.6.NEM652 NMRA8-pin

Some of KATO's HO plastics, Tenshodo and tramways are equipped with NEM652 (NMRA8-pin) DCC connector sockets. Basically, it is a connector for HO (No. 16), so I will explain how to convert it to Standard MTC21.

- Use the NEM652-MTC21 adapter

860046 Use MTC21 to NEM652 conversion cable. It can be easily converted to NEM652. However, it consumes volume, so please secure the loading space. You can purchase it at LaisDcc or the Desktop Station online store. Similar products are also sold by European and American manufacturers. You can also make your own.

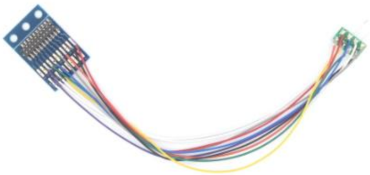


Figure 5.4.6.1 Lais860046 MTC21 to NEM652 Conversion Cable

・10047/10050/10055 ExpBoard M21 SuperShort narrow version (implemented) to NEM652 by yourself

Use the MTC21 drawer board and pull the NEM652 wiring from here. In addition, it is not intended to be NEM652, so it has the disadvantage that the wiring is easy to mess up.

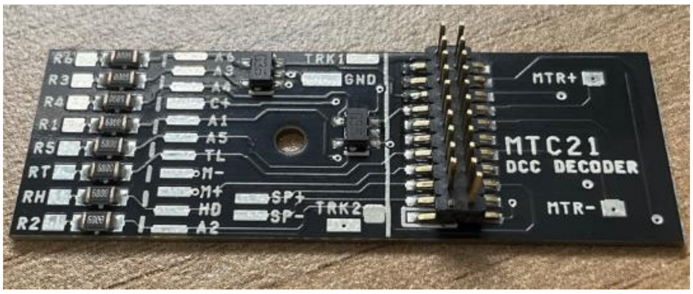


Figure 5.4.6.2 10047/10050/10055 ExpBoard M21 Super Short

- Pull out the wiring directly from the decoder without using the MTC21 connector

To modify NEM652, you can also prepare and wire your own AWG32 wires, connectors, etc. By using two 860047 NEM652 plugs and cables, or only four 860006 NEM652 plugs, you can avoid collecting and considering parts that are difficult to obtain.

5.5.Decoder Description

5.5.1.SmileSound Standard R2 MTC21

The SmileSound Standard R2 MTC21 is a 30x16mm NMRA DCC standard sound decoder for HO and is compatible with MTC21. It can carry current to the motor up to 1.5A.

It retains the same size as the standard MTC21 of the previous product, but has a built-in highly safe 25V/220uF polymer capacitor, which is more resistant to current collection failure than conventional products.

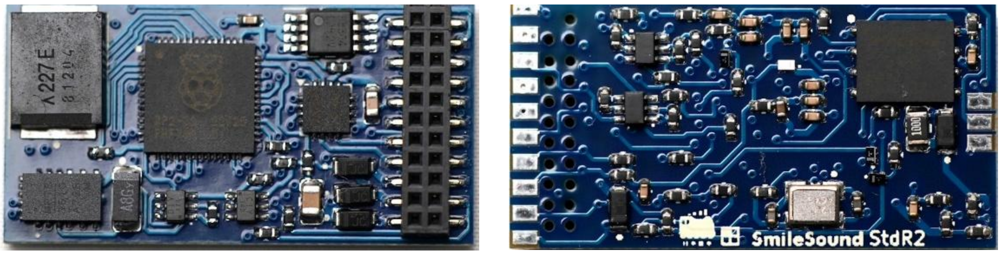


Figure 5.5.1.1 Appearance of the SmileSound Standard R2 MTC21

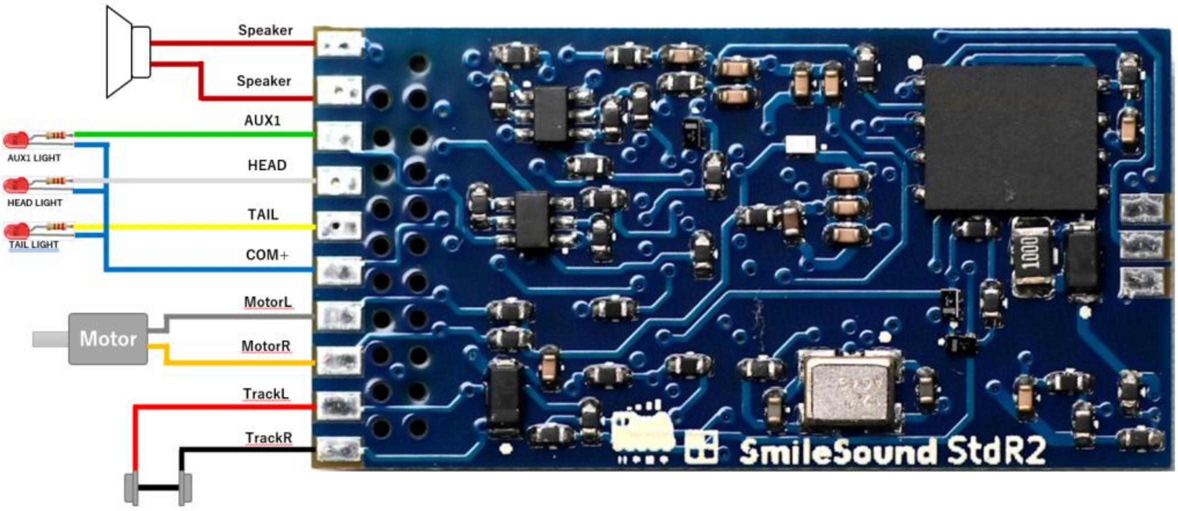


Figure 5.5.1.2to draw wiring from the pads of the Standard R2 MTC21

Table 5.5.1.1 Standard R2 MTC21 Pad

Pad Name	Pad Description
Speaker	Loudspeaker. There are two lines. When used with a single speaker, polarity does not matter. When using two or more pieces, pay attention to the phase of the sound.
MotorR/L	Wiring to the motor. There are two lines and they are polar. If you reverse wiring, the motor will rotate in reverse.
TAIL	Wiring to the taillight (cathode side for LEDs), (power output)
HEAD	Wiring to headlights Universal terminals (power output)
COM+	Power supply common terminals. The light is wired to the anode side.
AUX1	General-purpose terminals, mainly interior lights (power output). Open collector output
TrackR/L	Wiring on the track side

5.5.2.SmileSound Standard MTC21 (Discontinued)

Caution: Be sure to use the included capacitor or replacement. If it is not used, it is not guaranteed to work. For more information, see 5.6.

This is a sound decoder designed for HO gauges. It complies with the MTC21 standard and has a motor output of 1.5 Amax. Since there is room for large speakers, the amplifier circuit is adjusted to produce louder volume than decoders for N gauge.

The SmileSound Standard MTC21 is available with user-usable pads (soldering points). The Mini Next18 does not have any user-available pads. Figure 5.5.1 indicates the pads available to the user.

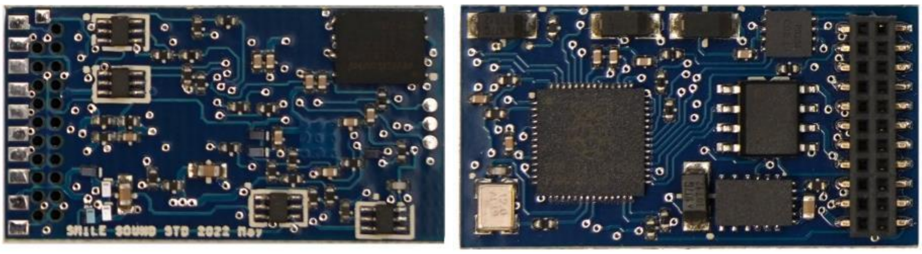


Figure 5.5.2.1 Appearance of the SmileSound Standard MTC21

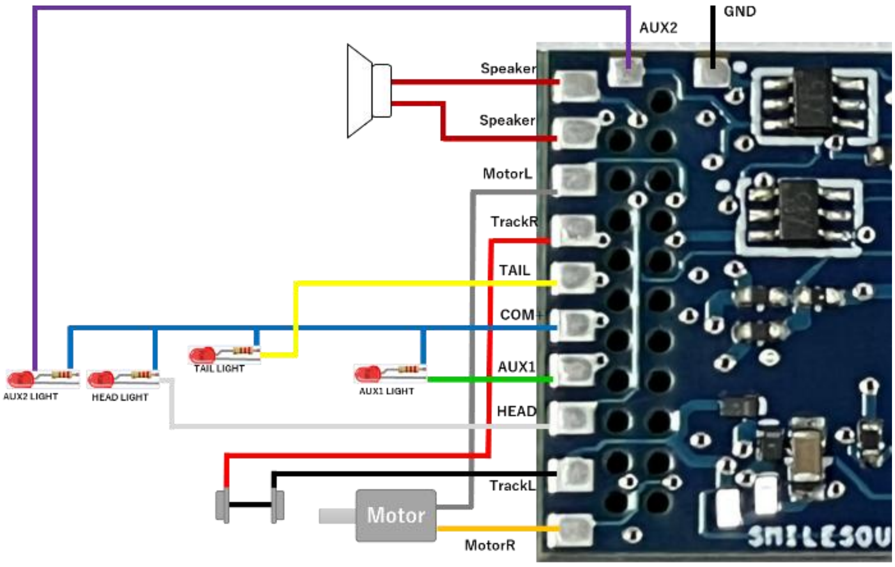


Figure 5.5.2.2 How to draw wiring from the pad of the Standard MTC21

Table 5.5.2.1 Standard MTC21 Pad

Pad Name	Pad Description
Speaker	Loudspeaker. There are two lines. When used with a single speaker, polarity does not matter. When using two or more pieces, pay attention to the phase of the sound.
MotorR/L	Wiring to the motor. There are two lines and they are polar. If you reverse wiring, the motor will rotate in reverse.
TAIL	Wiring to the taillight (cathode side for LEDs), (power output)
HEAD	Wiring to headlights Universal terminals (power output)
COM+	Power supply common terminals. The light is wired to the anode side.
AUX1	General-purpose terminals, mainly interior lights (power output). Open collector

	output
AUX2	General purpose terminals (power output). Open collector output
TrackR/L	Wiring on the track side
GND	GND terminal. Used for keep-alive capacitors, etc.

5.5.3.SmileSound Mini Next18

Caution: Be sure to use the included capacitor or replacement. If it is not used, it is not guaranteed to work. For more information, see 5.6.

The SmileSound Mini Next18 is a general-purpose, compact sound decoder intended for use in N-gauge locomotives. It is compliant with the Next18 standard and can be used with Next18 compliant locomotives worldwide.

It is not recommended to use HO/16. When using it, please limit it to use in lightweight locomotives such as plastic single lines. When used in heavy locomotives, you risk burning out the decoder if you do not properly install and select the capacitor at your own risk.

The width of the board for this product is 10.5 mm. It is in line with the width of the main sound decoder, but please note that it is about 1mm longer than the standard.

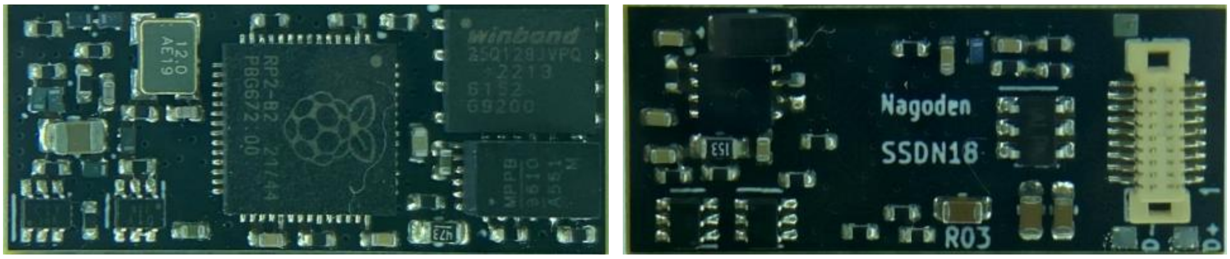


Figure 5.5.3.1 Appearance of the SmileSound mini Next 18

5.5.4.SmileSound Slim USB

The SmileSound Slim USB is primarily intended for GreenMax with integrated interior lighting, but it is also suitable for other KATO and Tomix N-gauge sounds, as well as small HO and narrow sounds. The motor output hasbeen enhanced from the S mileSound Next18, allowing it to be powered even in lightweight HO locomotives.

From the pads on the board, the wires are pulled out and connected to the wiring from the locomotive's motor or tracks for use. For single locomotives, headlight and taillight pads are also available.

The ears on the end of the SmileSound Slim USB can be cut off. Depending on the locomotive, the ears can be used for fixation, or they may need to be cut.

【Attention】 When wiring the headlights and taillights of the SmileSound Slim, be sure to have a 510~1kΩ resistor in series in addition to the LEDs. There are many cases where it is wired without resistance and damages the light-related circuitry.

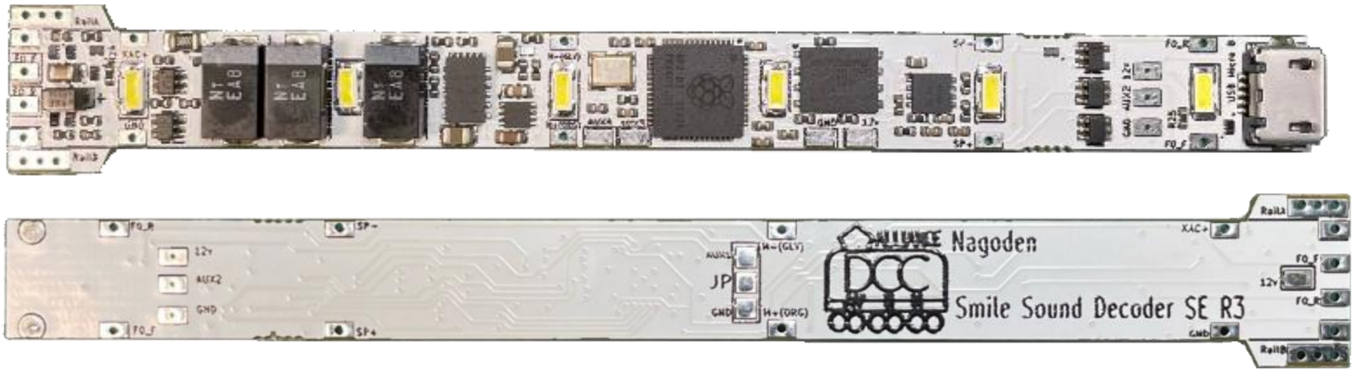


Figure 5.5.4.1 Appearance of the SmileSound Slim USB

Table 5.5.4.1 Pad Description of SmileSound Slim USB

Pad notation	Signal content
RailA, RailB	Wiring from the track
F0 F	headlight
F0 R	tail light
12V	COM+ or C+. Common power supply.
KAC+	Keep-alive Capacitor Connection Pad (+ side)
GND	gland
AUX1	Interior Light (POWER)
AUX2	External Output (POWER)
M+/M-	Motor Output

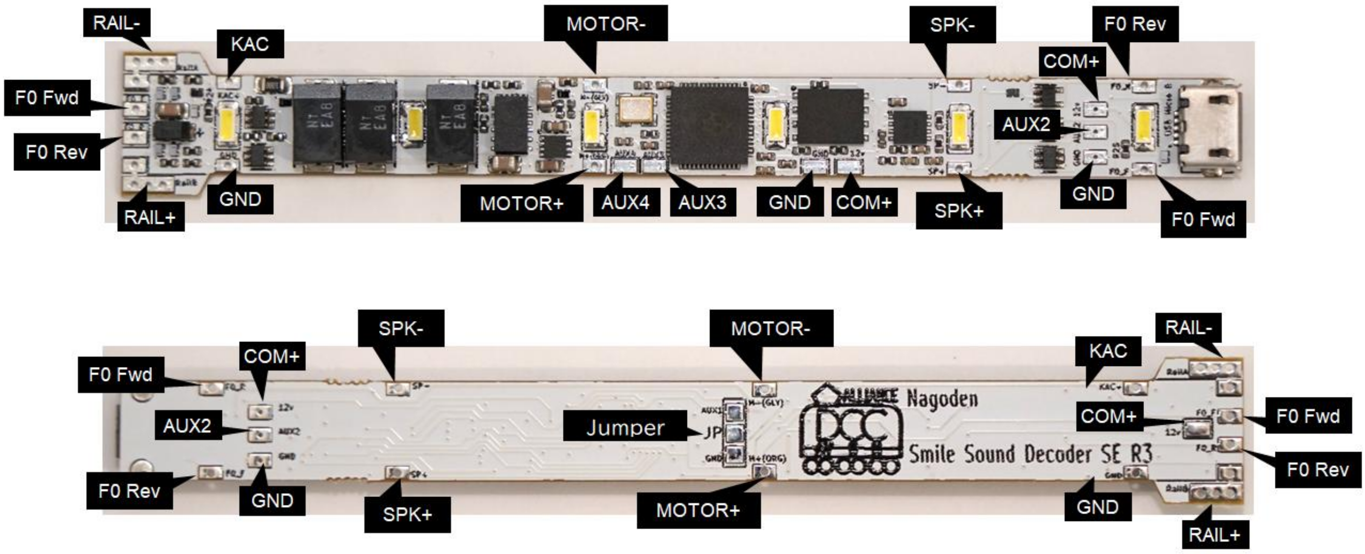


Figure 5.5.4.2 Assigning a Pad

5.5.5.SmileSound K3066 Sugar Rabbit

The SmileSound K3066 Sugar Rabbit is a sound decoder developed specifically for Sugar's N-gauge locomotive 3066 series (Rabbit)-compliant locomotives. It complies with the NMRA DCC standard with a size of 60x10.5 mm. It can carry current up to 0.5 A (continuous), which is sufficient for the Z and N gauge classes.

The firmware of the SmileSound K3066 Sugar Rabbit is the same as that of Zslim.

A large-capacity polymer capacitor (electrolytic capacitor is also acceptable) that cannot be placed on the board requires a separate wiring of 220uF or more (25V withstand voltage). In addition, in order to be installed together with the speaker, there are cases where die-cast aluminum processing in the locomotive is required.

Mechanical and mechanical measures such as center of gravity balance, weight, and removal of rubber wheels should also be implemented.

- MOTOR+/-: Motor Output Line
- SPK+/-: Speaker Output Wire
- RAIL+/-: Wiring from a track
- AUX1,AUX2,AUX3,AUX4: AUX output (3.3V, suction, 5mAmax)[2]
- +3.3V: Common power supply for AUX
- TC+: for keep-alive capacitors + side pads (never use for AUX.) The decoder fails.)
- GND: For keep-alive Capacitors - Side Pads

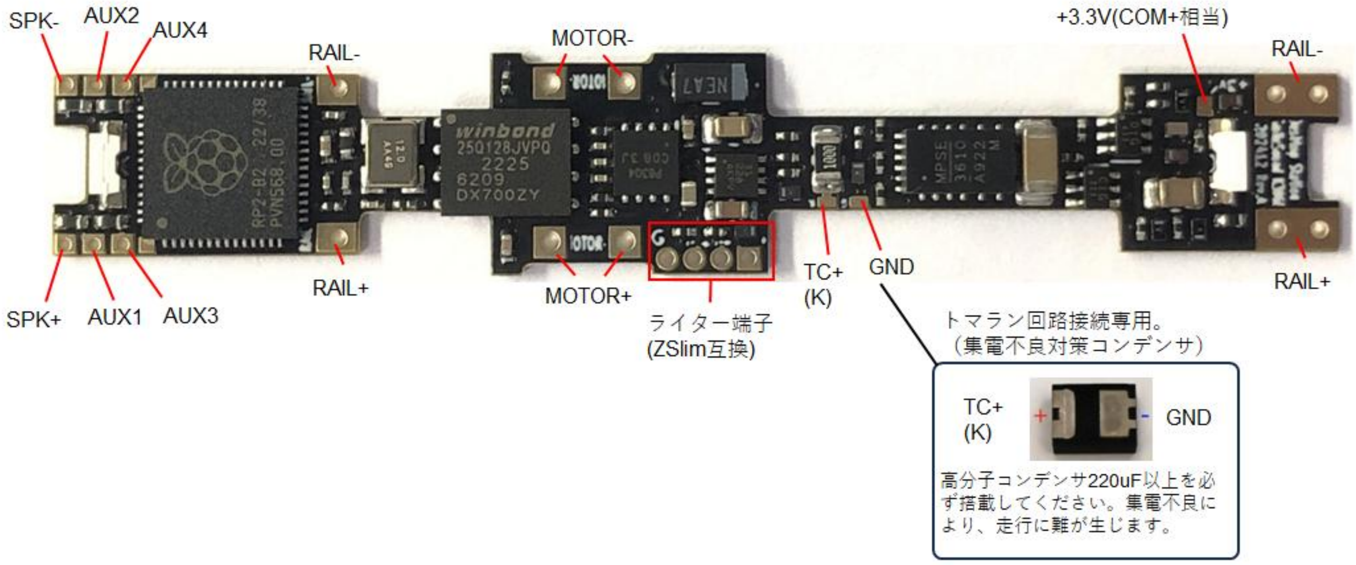


Figure 5.5.51 SmileSound K3066 Sugar Rabbit Board and Pad Assignment

[2] The use of AUX1-4 with the K3066 decoder is not recommended due to the very high wiring difficulty and risk of failure. The locomotive itself is not designed to light up the taillights, so please use it at your own risk.

5.5.6.SmileSound Sound Development Board

The SmileSound Sound Development Board has a USB connector, which is the interface to connect to a PC, so you can easily connect it to a PC to rewrite firmware and write sound data. It is suitable for sound data creation applications.

Inside, a diode is installed to prevent the backflow of the voltage applied from the command station. If this diode fails, there is a risk of voltage flowing back into the PC, causing the USB circuit or the PC itself to fail. If necessary, use a USB isolator or other device.

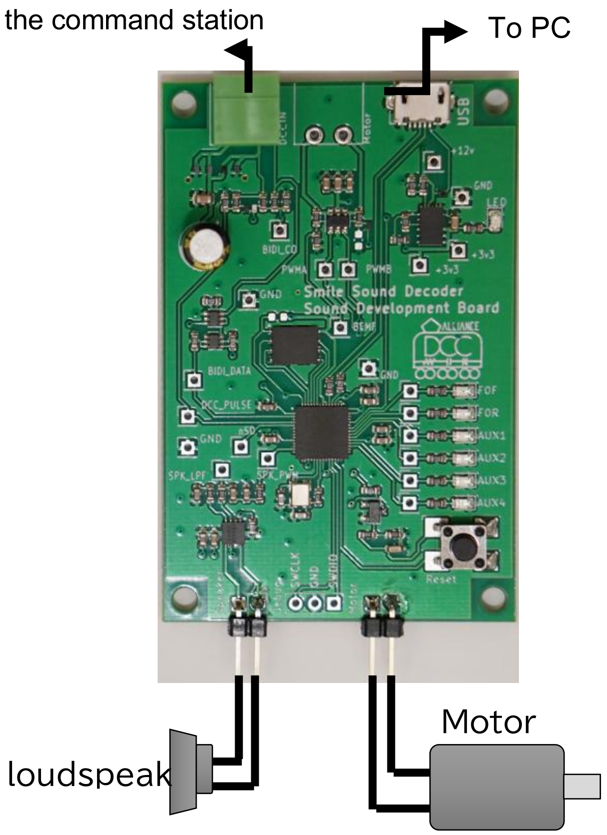


Figure 5.5.6.1 SmileSound Sound Development Board

5.6.Current collection countermeasures, Tomalan capacitors

The electronic components used in the SmileSound decoder consume a lot of power, so they are slightly less susceptible to poor current collection. For this reason, it is recommended to install an external electrolytic capacitor on the decoder. In addition to capacitors, the improvement effect is further increased by collecting current in multiple locomotives and wiring between locomotives. For example, the model train that runs on the diorama of the museum basically collects electricity from all locomotives.

Capacitor requirements include an electrolytic capacitor or polymer capacitor with a withstand voltage of 25V or higher, with a minimum of 200uF for the SmileSound mini Next18 and a minimum of 100uF for the SmileSound Standard MTC21. In addition, it varies greatly depending on the current collection performance, number of current collector axles, and the presence or absence of rubber tires of the locomotive to be mounted. Please use this recommendation as a reference only.

For example, if rubber tires are attached, the climbing power will be improved, but the current collection performance will be reduced because insulating rubber is attached to the wheels. In the case of locomotives with rubber tires, it is necessary to take measures to increase the number of capacitors. If you can use multiple locomotives to collect current with a live coupler, etc., it may not be a big problem even if you reduce the capacitor.

In addition, the ExpBoard series also has a type equipped with a keep-alive capacitor from the beginning (such as the 10055). Please take advantage of TOMARAN capacitor READY products.

Tomalan Capacitors (keep-alive capacitor)
https://desktopstation.net/wiki/doku.php/%E3%83%88%E3%83%9E%E3%83%A9%E3%83%B3%E3%82%B3%E3%83%B3%E3%83%87%E3%83%B3%E3%82%B5

Table 5.6.1 Capacitor Type

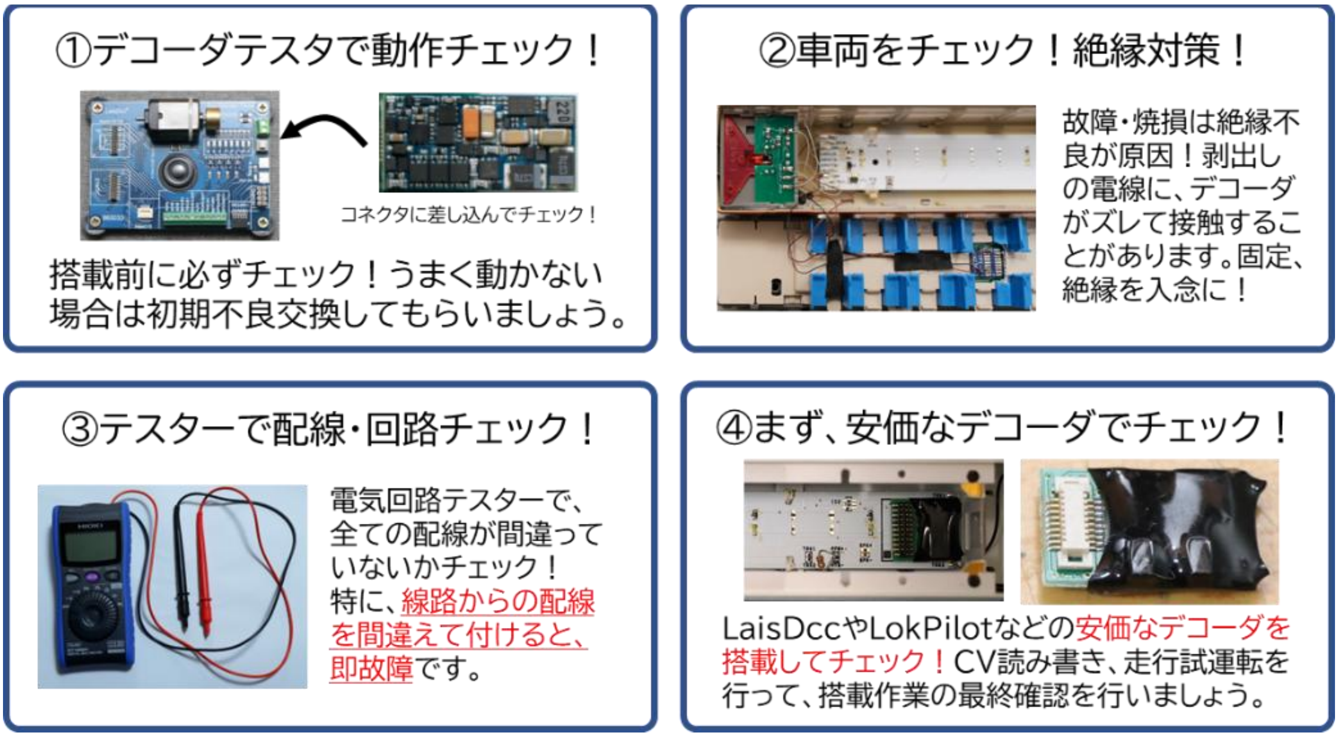
Capacitor Type	feature
Electrolytic Capacitors	Very inexpensive and large capacity. However, there is a weakness in that it is large. It has the disadvantage of being polar and exploding when used in reverse. If you don't make a mistake with the polarity, it is safe to use. It is suitable for large locomotives such as HO/16 and locomotives with few windows, which have relatively ample space to hide.
Polymer Capacitors	It is thin and has a large capacity, but the price is very high (about 30~50 times that of electrolytic capacitors). It is like ceramic capacitors, but polarized, and fails when used the opposite.
Ceramic Capacitors	A phenomenon called DC bias occurs in which the capacitor capacitor decreases. For this reason, it may be reduced by 1/2~1/3 from the stated capacity. For this reason, it is recommended to use electrolytic

	or polymer capacitors that do not generate DC bias. In addition, ceramic capacitors have small internal resistance, so they are prone to inrush current, and if there is no keep-alive capacitor circuit, it will cause rails and wheels to become dirty.

5.7.Installation of locomotives

A separate manual is available for instructions on how to install SmileSound in your vehicle. There are various precautions for mounting, so please prepare and take your time to do the work carefully.

It is also very effective to get advice from experts.



①デコーダテスタで動作チェック！

コネクタに差し込んでチェック！

搭載前に必ずチェック！うまく動かない場合は初期不良交換してもらいましょう。

②車両をチェック！絶縁対策！

故障・焼損は絶縁不良が原因！剥出しの電線に、デコーダがズレて接触することがあります。固定、絶縁を入念に！

③テスターで配線・回路チェック！

電気回路テスターで、全ての配線が間違っていないかチェック！特に、線路からの配線を間違えて付けると、即故障です。

④まず、安価なデコーダでチェック！

LaisDccやLokPilotなどの安価なデコーダを搭載してチェック！CV読み書き、走行試運転を行って、搭載作業の最終確認を行いましょう。

Figure 5.7.1 Precautions for vehicle mounting

Table 5.7.1 Tips and precautions for vehicle mounting

Take a picture of the mounting status. Problems can be found later and used for the next task. It is also easier to get advice when you get support.
Always be humble. Be aware that no matter how much you check, mistakes will happen.
Choose a thin wire. The thinness of AWG32 is a guideline. The thin wires are sold at Oyaide Electric in Akihabara and Sengoku Electric Co., Ltd.
Be sure to prepare a tester. Short tests are always conducted!
Also prepare insulating tape (polyimide tape or acetate tape)
Hold multiple soldering irons, such as thin or thick ones first.
Prepare heat shrink tubing of various thicknesses.
Fix the speaker. There have been many reports of magnets containing them, which come into contact with the track and cause a short circuit, causing the decoder to fail. If the speaker wiring and the wire come into contact, the decoder will definitely fail.
Be sure to prepare a decoder tester. Make sure it works before installation.
Test the vehicle you have installed on it with an inexpensive decoder. Many people use expensive decoders to break down from the beginning.

5.8.Causes of failure and countermeasures

Through SmileSound's fault replacement service, we collect various fault information from users. From the results, we summarize the causes of failures, what happened to decoders, and what to do about them, in order of most occurrences. We hope you will find it helpful.

When you are unfamiliar with it, you may break down. However, there are cases where the same breakdown is repeated. This is due to the fact that the cause is not properly identified and measures are not taken, so the same mistake is made again at random.

If you lack knowledge and cannot determine the cause, leave photos and records and report the fault to the Digital Model Railroad Forum. Then, you can receive advice from experts and the estimated cause will be clarified. Breakdowns are unavoidable, but what to do after that will be a turning point in whether you will further increase the breakdowns or you will be able to enjoy DCC without breakdowns.

Table 5.8.1 Causes of failure and examples of countermeasures

	Causes of failure	Decoder status	What should I have done?
1	I encountered the COM+ wiring and the track wiring.	The decoder fails because a large current flows through the internal power supply circuit. Repairs are not possible.	Insulating the exposed conductive parts of COM+ and track wiring with tape, etc., and fixing the wiring to prevent it from moving, etc.
2	I encountered the speaker wiring and the track wiring		Fix the speaker and insulate the exposed part of the conductive part with tape. Since the speaker contains magnets, there are many cases where it gets stuck in the track or other metal and breaks down in a short circuit.
3	I encountered the motor wiring and the track wiring		
4	I contacted the motor wiring and the speaker wiring		
5	The wiring of the decoder touched the car body (in a brass vehicle)		It seems to be acceptable for analog use, but it is dangerous to let the car body pass through instead of wiring on one side of the track in the first place. Don't use the car body instead of wiring.

5.9.Decoder insulation measures

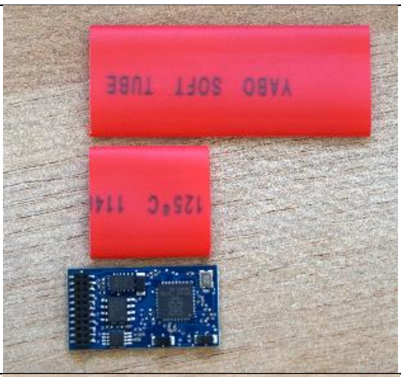
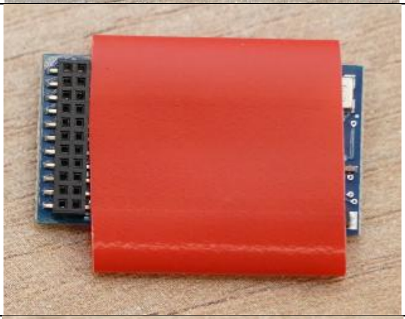
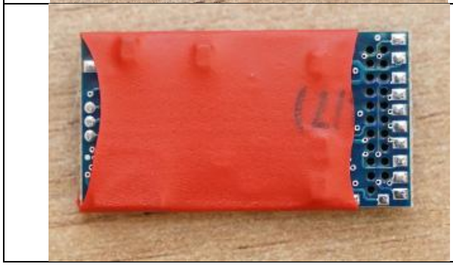
Insulation measures for decoders are very important. The most common is a short circuit through the wiring connected to the decoder, but it can also be damaged by some metal or conductive object hitting the decoder itself. Here, we will show you how to cover the decoder itself with an insulating component.

To cover the decoder itself with insulation materials, there are the following methods:

- Cover heat shrinks tubing
- Winding using polyimide tape
- Winding using acetate tape
- Wrap it using sellotape *Not recommended because it doesn't look good.
- Wrap it using vinyl tape *Not recommended because it is sticky

The most effective and good-looking method is to "cover the heat shrink tube". Below are some methods of insulation using heat shrink tubing sold in electronic component stores. This method requires an industrial dryer. If you don't have one, you can use a soldering iron tip by heating it or grilling it with a burner or lighter, but it is not recommended because of the risks.

Table 5.9.1 How to cover heat shrink tubing

	Cut the heat shrink tubing to the size of the decoder. Do not cover the MTC21 or Next18 connectors. Also, especially on the Standard MTC21, make sure that the round pad on the edge of the board that hits the pogo pin is the length of the USB writer.
	Cover with cut heat shrink tubing
	If possible, apply heat to a heat gun (industrial dryer) from a little distance to deflate it. At this time, use tweezers to sandwich the decoder and heat shrink tube. After applying heat, it is very hot, so be careful not to burn yourself.

5.10. Speaker insulation measures

There are compact 15x11mm cube speakers that are commonly used in N-gauge, for example. In fact, if you use it as it is, the risk is very high. The problem is that the red frame below is the conductive part (where electricity flows) through the speaker signal.

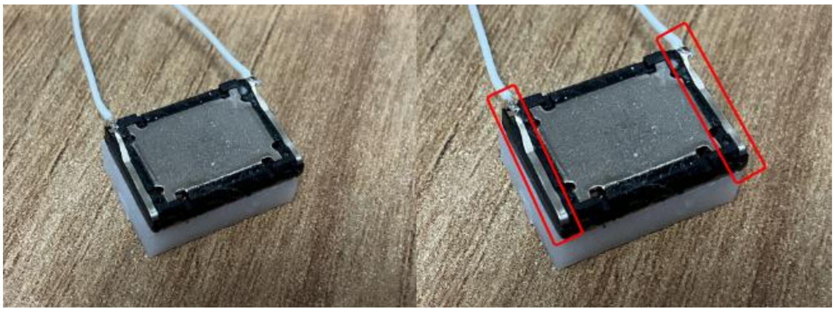


Figure 5.10.1 Conductive part of the cube speaker

This is connected to the speaker terminal of the decoder, and if this contact the wiring from the track, the voltage from the wire will flow back to the decoder, causing damage. This is because the circuit determines the part where the high voltage of the track can be put in and the part dedicated to the low voltage where the high voltage is NG. The speaker wiring does not emit high voltage. Also, of course, there is no function like a microphone, so it is not allowed to type something.

The track voltage is a higher voltage, such as 12V, so the electrical property of flowing from a high place to a low place causes backflow. You will be forced to apply voltage from the speaker to the decoder, which will break the internal circuit.

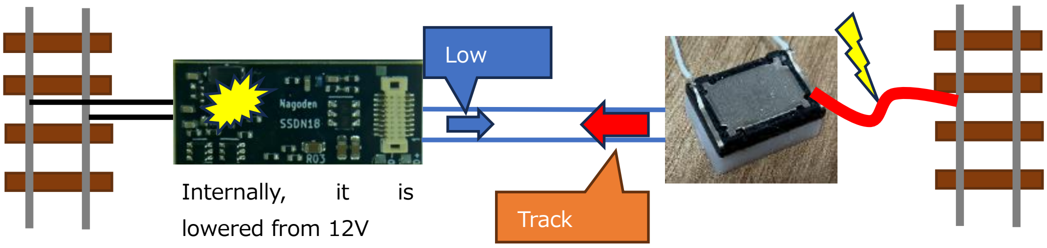


Figure 5.10.2 Mechanisms by which decoders fail

Therefore, it is necessary to take measures to prevent the speaker from being hit by different wiring, die-cast metal, etc. and short-circuiting. Below is an example of covering with masking tape. It can be sellotape or polyimide tape. I put a cover on it. It is also effective to fix it with glue and prevent it from moving.

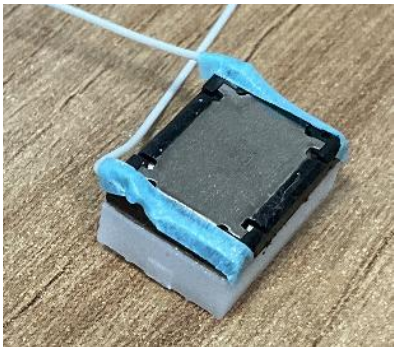


Figure 5.10.3 Speakers insulated with masking tape

6.USB Writer

6.1.Introduction to USB Writers

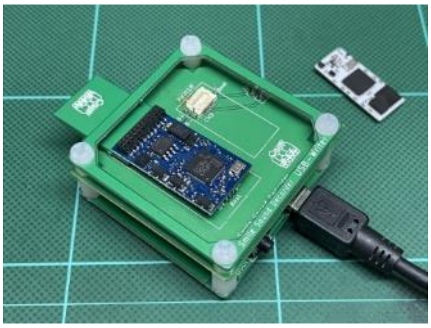


Figure 6.1.1 USB Writer

The Smile Sound decoder is an adapter device for writing sound data and firmware to SmileSound via USB. The firmware and sound data for SmileSound are written via a USB writer.

USB wiring uses a pogo pin (like a sword mountain with a built-in spring) to connect the USB writer and decoder. The Next18's Smile Sound decoder can be easily removed with your fingers, but when removing the MTC21's Smile Sound decoder, use claws, plastic pins, or guitar picks. At this time, be careful not to directly hit the parts on the decoder board with the tip of the jig used for removal.

For example, please do not pull it out with a flathead screwdriver. There have actually been several cases where the tip of the driver hits the decoder part and the decoder fails due to a short circuit, etc. If the decoder is damaged due to incorrect use by the user, the operation is not guaranteed.

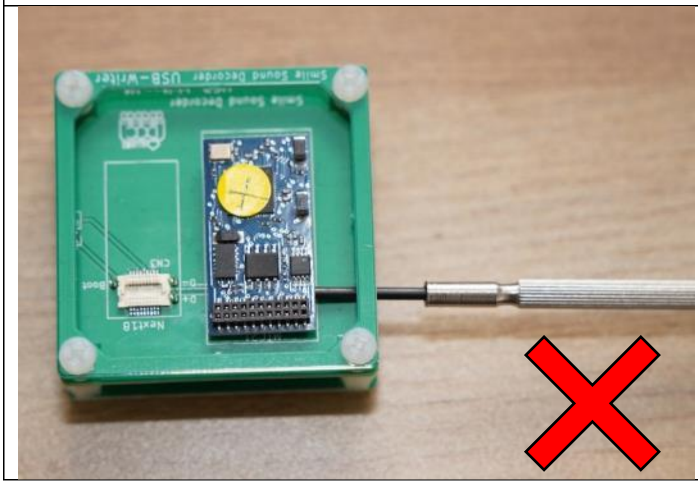
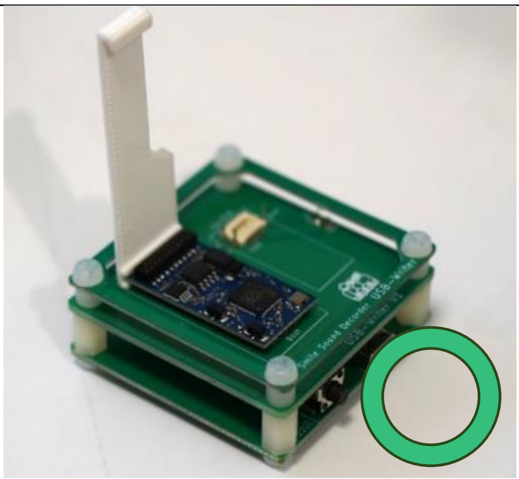
× NG	○ OK
	

Figure 6.1.2 Examples of incorrect decoder removal

6.2.How to use a USB writer

By using a USB writer and DSSP, a software that runs on a computer, you can write firmware and write sound data.

There are two main ways to write firmware and sound data to SmileSound, but it is generally highly recommended to use the "Write Sound to SmileSound Decoder" and "Firmware Update" functions, which are direct writing functions using DSSP.

In addition, you can export sound data in UF2 format by "Export sound data in UF2 format" and then write it manually. The manual writing procedure will not be introduced in this manual because it will be an emergency evacuation operation in the event of a SmileSound failure and will be used within our company.

6.3.Writing Sound Data to SmileSound Using DSSP

Please read this section after completing 7.2 first, which will be described later. Also, download the sound data you want to write from the sound data posted on the SmileSound website in advance, or obtain the sound data in some way.

DSSP has a function that detects the smile sound decoder and forces the drive to open so that it can write. Depending on the PC environment and the situation of the USB device, there are rare cases where things do not work. Then、Table 6.3.2Please refer to the Wikipedia page and perform tasks such as reinserting and unplugging it once. The operation procedure is as follows:

Table 6.3.1 Sound Data Writing Procedure

procedure	Operation method
1	Attaching a Smile Sound decoder to a USB lighter
2	Plug the USB lighter cable into your computer
3	Start DSSP. If DSSP is already running, you don't need to start it. Notice that it says "Found SmileSound on SerialPort" on the bottom bar of the DSSP.
4	Open the sound data you want to write in DSSP.
5	Press the write button in DSSP to write.
6	Until the end of writing
7	When the writing is finished, the drive is automatically removed, so disconnect the USB cable from the computer.
8	Remove the Smile Sound decoder from the USB lighter
9	Writing completed

Table 6.3.2 What to do if you don't recognize it

Change the USB cable	If you use the USB cable that comes with other products repeatedly, it may not work. For special specifications such as charging only. Be careful not to break the wire.
Change the decoder	If the decoder is faulty, it will not recognize.
No USB hub	Sometimes you can't communicate well due to the influence of the hub.
Disconnect the USB device	A large number of USB devices may interfere with the connection.

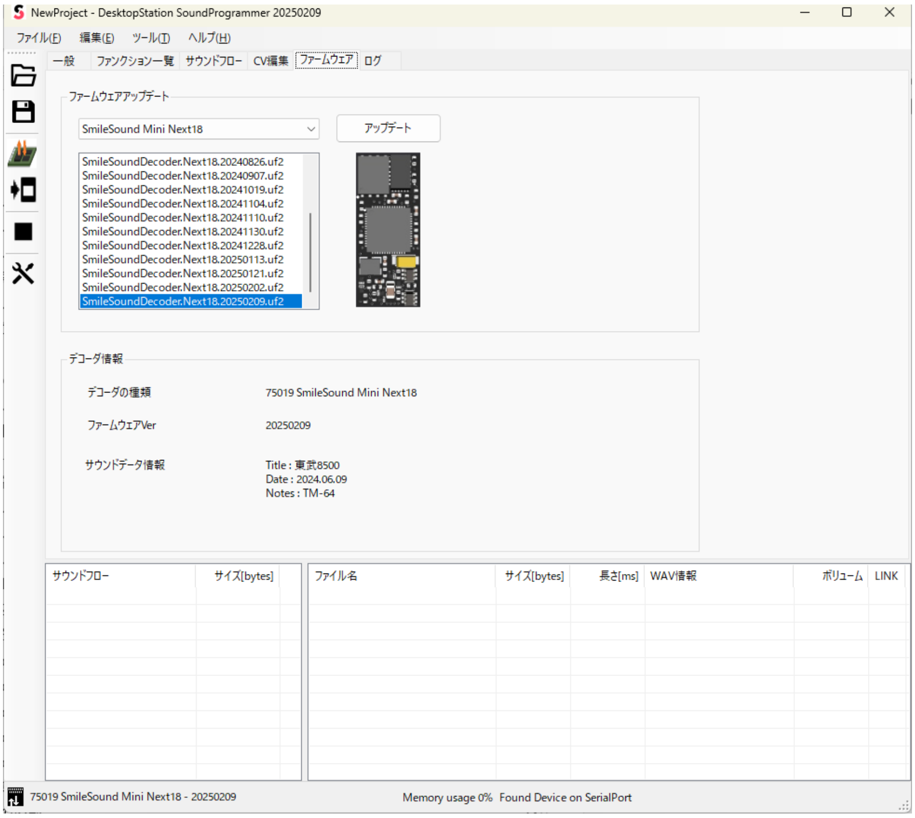
Restart your PC	Sometimes for some reason the USB device does not recognize it well
Change PC	It has been reported that some PCs do not recognize it well.

6.4.Writing firmware to SmileSound using DSSP

Please read this section after completing 7.2 first, which will be described later.

You can use DSSP to update the internal software (firmware) of your SmileSound decoder. Multiple versions of the past are available in DSSP, so if something goes wrong, you can revert to the old version. Note that if new features are added, they may not work well due to discrepancies. Basically, please select the latest version of the firmware.

Select the "Firmware" tab to perform firmware update operations.



NewProject - DesktopStation SoundProgrammer 20250209

SmileSound Mini Next18

SmileSoundDecoder.Next18.20240826.uf2
SmileSoundDecoder.Next18.20240907.uf2
SmileSoundDecoder.Next18.20241019.uf2
SmileSoundDecoder.Next18.20241104.uf2
SmileSoundDecoder.Next18.20241110.uf2
SmileSoundDecoder.Next18.20241130.uf2
SmileSoundDecoder.Next18.20241228.uf2
SmileSoundDecoder.Next18.20250113.uf2
SmileSoundDecoder.Next18.20250121.uf2
SmileSoundDecoder.Next18.20250202.uf2
SmileSoundDecoder.Next18.20250209.uf2

デコーダの種類 75019 SmileSound Mini Next18

ファームウェアVer 20250209

サウンドデータ情報 Title : 東武8500
Date : 2024.06.09
Notes : TM-64

75019 SmileSound Mini Next18 - 20250209 Memory usage 0% Found Device on SerialPort

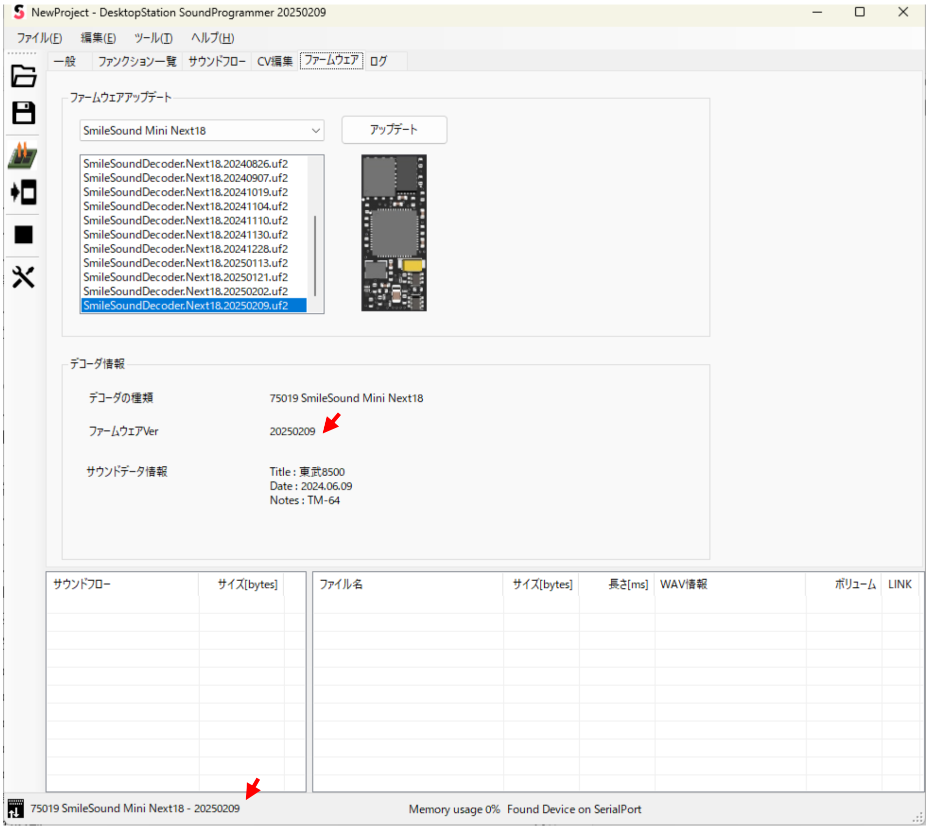
Figure 6.4.1 DSSP Firmware Tab

The firmware depends on the type of decoder used. It is usually selected automatically, but please note that if you change it by mistake and write the firmware, you may experience problems such as the motor not working. If you make a mistake, manually change the decoder type from the drop-down and press the "Update" button.

After selecting the date (version) of the firmware you want to burn, press the "Download" button to write. The latest version is usually selected automatically.

Make sure SmileSound is aware of this. If SmileSound is not recognized, you may not be able to write well.

If SmileSound fails, many decoders will not be recognized by DSSPs. In addition, the decoder may heat up abnormally due to the power supply from the PC. In this case, please stop using the malfunctioning SmileSound immediately and use the paid fault replacement service (service is only available for a certain period of time after purchase).



SmileSound Mini Next18

SmileSoundDecoder.Next18.20240826.uf2
SmileSoundDecoder.Next18.20240907.uf2
SmileSoundDecoder.Next18.20241019.uf2
SmileSoundDecoder.Next18.20241104.uf2
SmileSoundDecoder.Next18.20241110.uf2
SmileSoundDecoder.Next18.20241130.uf2
SmileSoundDecoder.Next18.20241228.uf2
SmileSoundDecoder.Next18.20250113.uf2
SmileSoundDecoder.Next18.20250121.uf2
SmileSoundDecoder.Next18.20250202.uf2
SmileSoundDecoder.Next18.20250209.uf2

デコーダの種類	75019 SmileSound Mini Next18
ファームウェアVer	20250209
サウンドデータ情報	Title : 東武8500 Date : 2024.06.09 Notes : TM-64

サウンドフロー	サイズ[bytes]

ファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム	LINK

75019 SmileSound Mini Next18 - 20250209   Memory usage 0% Found Device on SerialPort

Figure 6.4.2 Display after automatic recognition of SmileSound (version information displayed)

7.Sound Programmer DSSP

7.1.What is DSSP?

DesktopStation Sound Programmer (DSSP) is a software for Windows that allows you to create sound data for SmileSound. This tool allows users to program the SmileSound decoder freely. The sound data (SSDX files) generated by this tool can also be shared with other users. By scripting a combination of sound movement, AUX operation, function buttons, and driving speed states, SmileSound acts as a sound decoder.

It mainly has the following functions.

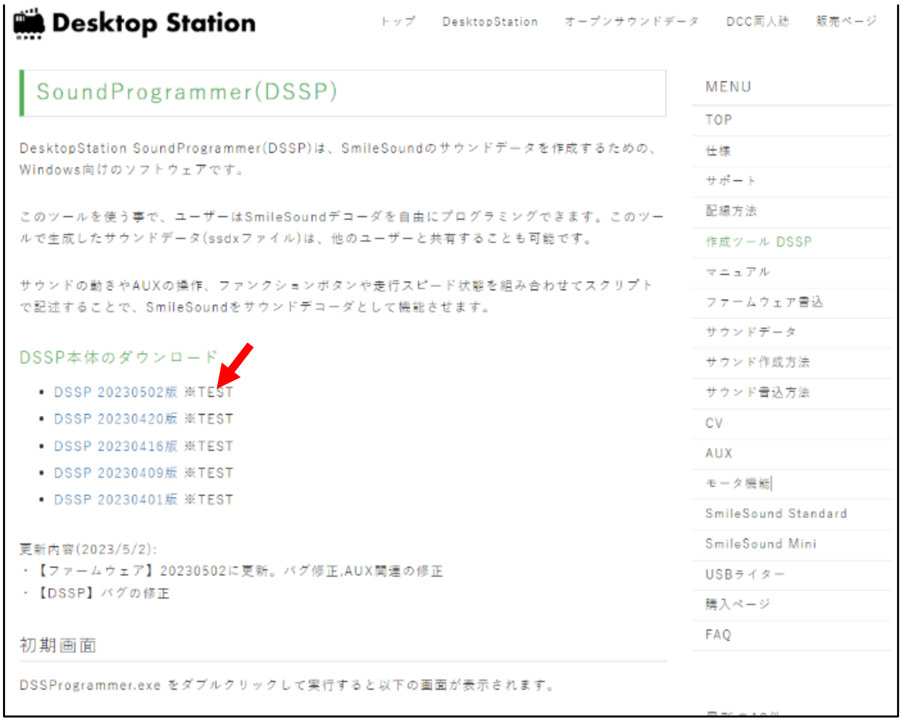
- Review, create, and edit sound data for SmileSound
- Writing Sound Data to the SmileSound Decoder
- Update the firmware of the SmileSound decoder
- CV Editing for SmileSound Decoder

DSSP is free for anyone to use, subject to the license and terms.

7.2.Download and install DSSP

You can download the latest version of DSSP from the SmileSound website. The downloaded DSSP is packaged in ZIP format, so you can unzip (unzip) it is using Explorer or an archiver such as 7zip.

DSSP public URL
https://desktopstation.net/smilesound/index.php?SoundProgrammer



SoundProgrammer(DSSP)

DesktopStation SoundProgrammer(DSSP)は、SmileSoundのサウンドデータを作成するための、Windows向けのソフトウェアです。

このツールを使う事で、ユーザーはSmileSoundデコーダを自由にプログラミングできます。このツールで生成したサウンドデータ(ssdxファイル)は、他のユーザーと共有することも可能です。

サウンドの動きやAUXの操作、ファンクションボタンや走行スピード状態を組み合わせてスクリプトで記述することで、SmileSoundをサウンドデコーダとして機能させます。

DSSP本体のダウンロード

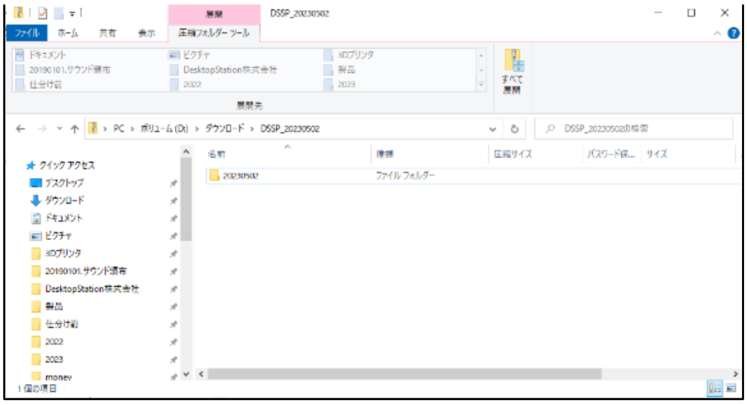
- DSSP 20230502版 ※TEST
- DSSP 20230420版 ※TEST
- DSSP 20230416版 ※TEST
- DSSP 20230409版 ※TEST
- DSSP 20230401版 ※TEST

更新内容(2023/5/2):
・【ファームウェア】20230502に更新。バグ修正,AUX関連の修正
・【DSSP】バグの修正

初期画面

DSSProgrammer.exe をダブルクリックして実行すると以下の画面が表示されます。

Figure 7.2.1 DSSP download page

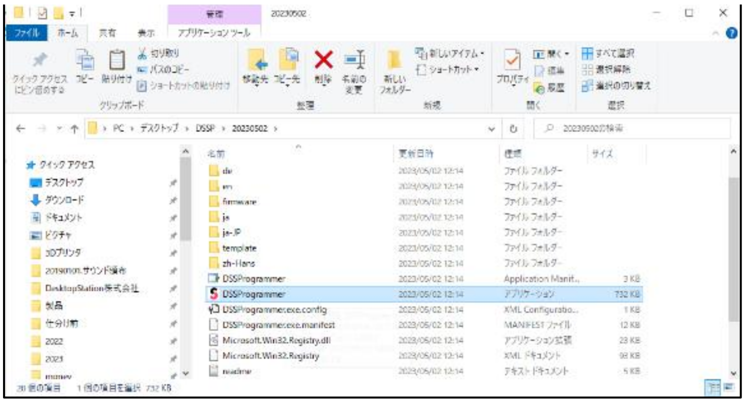


PC › ボリューム (D:) › ダウンロード › DSSP_20230502

名前	種類	圧縮サイズ	パスワード保...	サイズ
20230502	ファイル フォルダー			

Figure 7.2.2 Example in a DSSP ZIP file opened in File Explorer

Once unzipped, a folder will be created as shown below. The path (folder location) varies depending on the unzipping destination and the user's PC environment and settings.

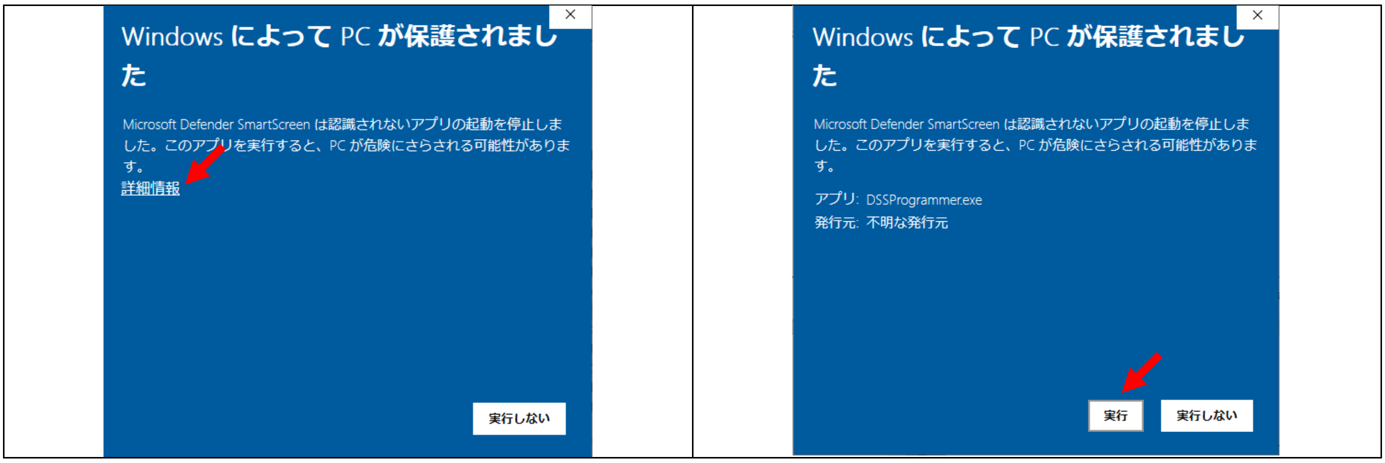


PC › デスクトップ › DSSP › 20230502

名前	更新日時	種類	サイズ
de	2023/05/02 12:14	ファイル フォルダー	
en	2023/05/02 12:14	ファイル フォルダー	
firmware	2023/05/02 12:14	ファイル フォルダー	
ja	2023/05/02 12:14	ファイル フォルダー	
ja-JP	2023/05/02 12:14	ファイル フォルダー	
template	2023/05/02 12:14	ファイル フォルダー	
zh-Hans	2023/05/02 12:14	ファイル フォルダー	
DSSProgrammer	2023/05/02 12:14	Application Manit...	3 KB
DSSProgrammer	2023/05/02 12:14	アプリケーション	732 KB
DSSProgrammer.exe.config	2023/05/02 12:14	XML Configuratio...	1 KB
DSSProgrammer.exe.manifest	2023/05/02 12:14	MANIFEST ファイル	12 KB
Microsoft.Win32.Registry.dll	2023/05/02 12:14	アプリケーション拡張	23 KB
Microsoft.Win32.Registry	2023/05/02 12:14	XML ドキュメント	98 KB
readme	2023/05/02 12:14	テキスト ドキュメント	5 KB

Figure 7.2.3 Example of an unzipped DSSP folder

You can launch DSSP by double-clicking on the file DSSProgrammer.EXE. On the very first startup, a warning screen is displayed,



Windows によって PC が保護されました

Microsoft Defender SmartScreen は認識されないアプリの起動を停止しました。このアプリを実行すると、PC が危険にさらされる可能性があります。

詳細情報

実行しない

Windows によって PC が保護されました

Microsoft Defender SmartScreen は認識されないアプリの起動を停止しました。このアプリを実行すると、PC が危険にさらされる可能性があります。

アプリ: DSSProgrammer.exe

発行元: 不明な発行元

実行　実行しない

Figure 7.2.4 How to Bypass Defender SmartScreen Features

7.3.DSSP Startup and Brief Description

When the DSSP is started, Figure 7.3.A screen like the one shown in 1 will appear. DSSP is starting normally. From this screen, you can edit the sound data, write it to the SmileSound decoder, etc. First, open and edit the sound data.

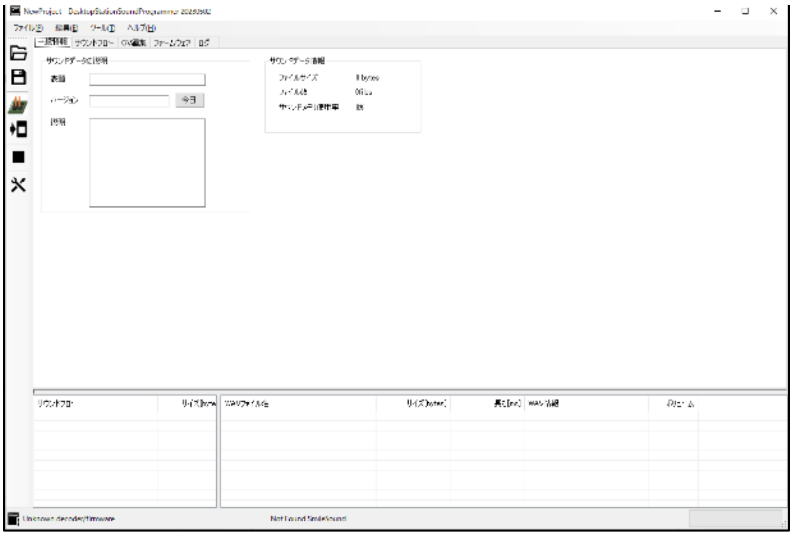


Figure 7.3.1 Screen immediately after starting DSSP

Sound data can be downloaded from the SmileSound homepage. Here's what it takes to download Kiha 40 and open it with DSSP.

First, open the Sound Data for SmileSound website in one of the browsers installed on your computer, such as Chrome, EDGE, or Safari.

Sound Data for SmileSound Homepage

https://desktopstation.net/smilesound/index.php?SoundData

When the Sound Data homepage appears, scroll to see a link to the name of the railway company. Once you have selected the desired company name, you will be able to jump to the page and the sound data will be displayed in a list.

Here, let's select "DMF15HSA Kiha 40 series diesel car" from the "Diesel and Diesel Train" section. Then, along with a photo of the Kiha 40, a text explaining the contents of the sound data and a list of function key assignments are displayed.

From this page, you can download the "Sound Data File". Press the DOWNLOAD button to download it.

Desktop Station
SmileSound用 日本型サウンドデータ
MENU
サウンドデータの鉄道会社カテゴリ

Figure 7.3.2 List of sound data

Figure 7.3.3 Kiha40 data

Sound data files that can be used with SmileSound are files with the ".ssdx" extension. Once the download is complete, open this file in DSSP. Open it either in D&D on the screen or in Open Project from the File menu.

Figure 7.3.5 shows the state of the Kiha 40 sound data open. Sound data includes Sound Flow (CSV) and Sound Source Data (WAV)The contents are displayed in the two file viewers at the bottom. These files can be replaced, and users can import (import) original sound sources and CSVs from the outside by themselves. You can import it from the edit menu, right-click on the file viewer and display the pop-up menu, or do D&D.

In this state, you can write sound data to the SmileSound decoder by following the steps described above to write sound data to SmileSound. You can also do editing work and modify it into the original sound data.

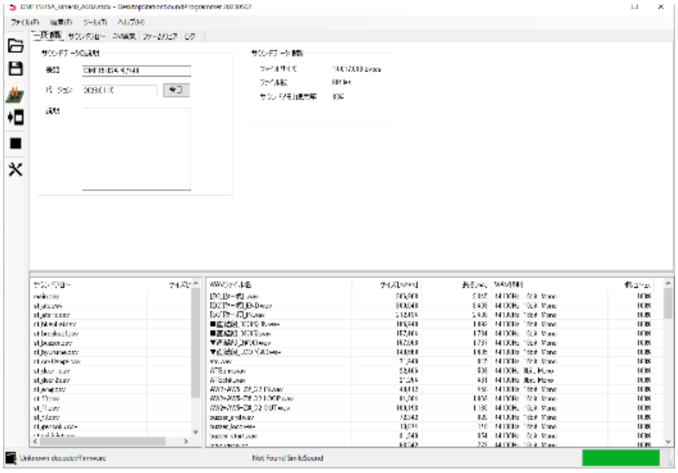


Figure 7.3.4 Kiha 40 data open in DSSP

7.4.General information

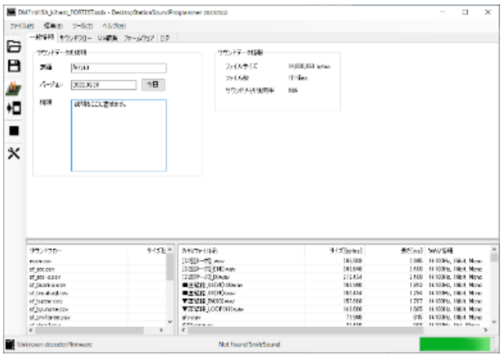


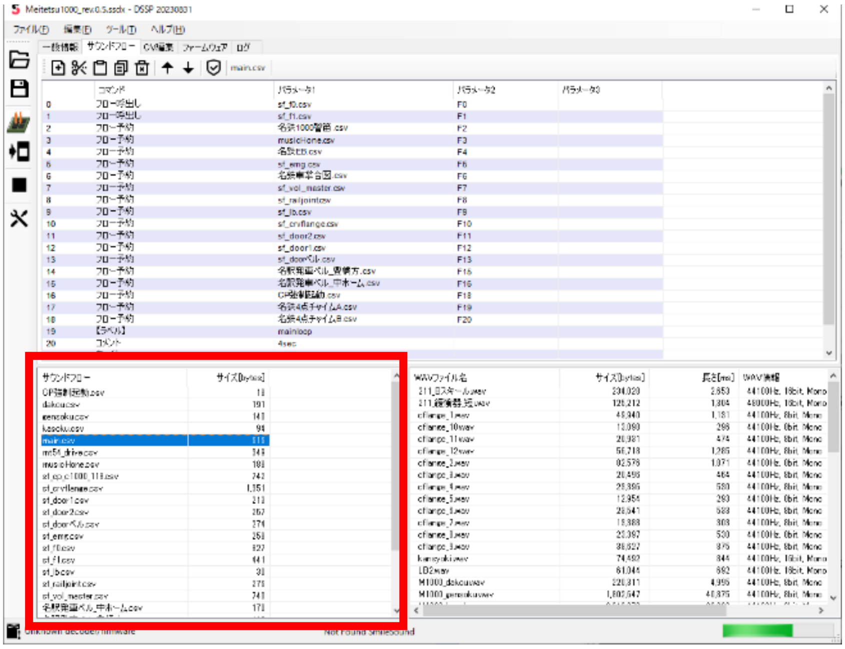
Figure 7.4.1 General Information Tab

The General Information tab is divided into a screen to register the title, content, date, etc. of sound data, and a part to display overall information.

The content of the title, version, and description is used as information to note the content of the sound data. As sound data, it does not undergo any processing. The description does not affect the operation of the decoder or the content of the sound data. Use it for data management and as a memorandum.

7.5.Soundflow

If you select a soundflow from the list of soundflows on the left side of the two file viewers, it will automatically switch to a screen where you can edit the soundflow. More on that later.



Meitetsu1000_rev0.5.ssdx - DSSP 20230831

	コマンド	パラメータ1	パラメータ2	パラメータ3
0	フロー呼出し	sf_f0.csv	F0	
1	フロー呼出し	sf_f1.csv	F1	
2	フロー予約	名鉄1000警笛.csv	F2	
3	フロー予約	musicHone.csv	F3	
4	フロー予約	名鉄EB.csv	F4	
5	フロー予約	sf_emg.csv	F5	
6	フロー予約	名鉄車掌合図.csv	F6	
7	フロー予約	sf_vol_master.csv	F7	
8	フロー予約	sf_railjoint.csv	F8	
9	フロー予約	sf_lb.csv	F9	
10	フロー予約	sf_crvflange.csv	F10	
11	フロー予約	sf_door2.csv	F11	
12	フロー予約	sf_door1.csv	F12	
13	フロー予約	sf_doorベル.csv	F13	
14	フロー予約	名駅発車ベル_豊橋方.csv	F15	
15	フロー予約	名駅発車ベル_中ホーム.csv	F16	
16	フロー予約	CP強制起動.csv	F18	
17	フロー予約	名鉄4点チャイムA.csv	F19	
18	フロー予約	名鉄4点チャイムB.csv	F20	
19	【ラベル】	mainloop		
20	コメント	4sec		

サウンドフロー	サイズ[bytes]
CP強制起動.csv	18
dakou.csv	191
gensoku.csv	141
kasoku.csv	94
main.csv	515
mt54_drive.csv	349
musicHone.csv	188
sf_cp_c1000_118.csv	742
sf_crvflange.csv	1,351
sf_door1.csv	213
sf_door2.csv	267
sf_doorベル.csv	274
sf_emg.csv	258
sf_f0.csv	327
sf_f1.csv	441
sf_lb.csv	30
sf_railjoint.csv	275
sf_vol_master.csv	741
名駅発車ベル_中ホーム.csv	178

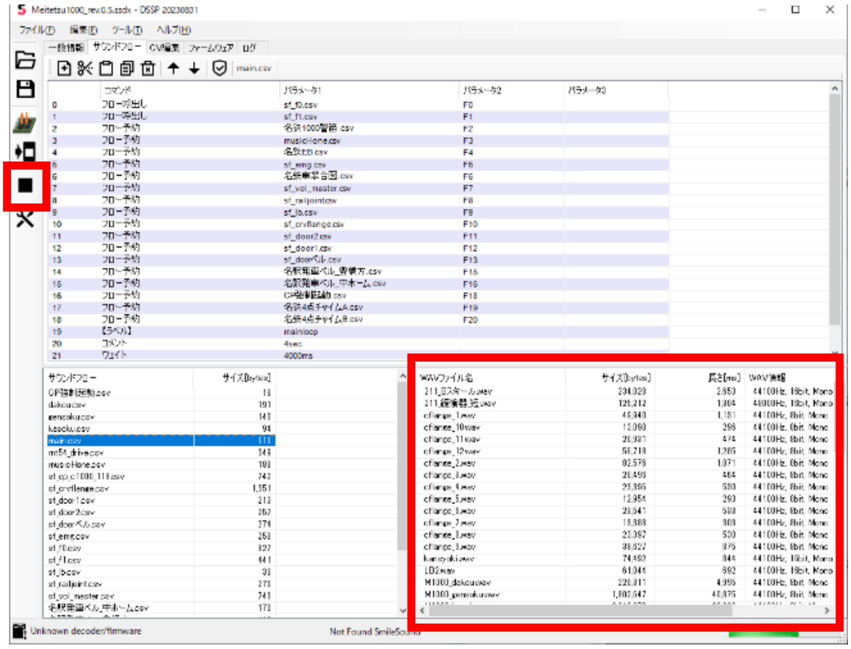
WAVファイル名	サイズ[bytes]	長さ[ms]	WAV情報
211_エスキール.wav	234,020	2,653	44100Hz, 16bit, Mono
211_緩衝器_短.wav	125,212	1,304	48000Hz, 16bit, Mono
cflange_1.wav	49,940	1,131	44100Hz, 8bit, Mono
cflange_10.wav	13,090	296	44100Hz, 8bit, Mono
cflange_11.wav	20,931	474	44100Hz, 8bit, Mono
cflange_12.wav	56,718	1,285	44100Hz, 8bit, Mono
cflange_2.wav	[illegible]	1,071	44100Hz, 8bit, Mono
cflange_3.wav	20,496	464	44100Hz, 8bit, Mono
cflange_4.wav	25,596	580	44100Hz, 8bit, Mono
cflange_5.wav	12,954	293	44100Hz, 8bit, Mono
cflange_6.wav	25,941	588	44100Hz, 8bit, Mono
cflange_7.wav	13,388	303	44100Hz, 8bit, Mono
cflange_8.wav	23,397	530	44100Hz, 8bit, Mono
cflange_9.wav	38,627	875	44100Hz, 8bit, Mono
kamyoki.wav	74,492	844	44100Hz, 16bit, Mono
LD2.wav	61,044	692	44100Hz, 16bit, Mono
M1000_dakou.wav	220,311	4,995	44100Hz, 8bit, Mono
M1000_gensoku.wav	1,802,647	40,875	44100Hz, 8bit, Mono

Unknown decoder/firmware Not Found SmileSound

Figure 7.5.1 List of Soundflows

7.6.Sound Data

The one on the right of the two bottom file viewers is the sound data stored in the sound data. It is an uncompressed linear PCM and integer type (UINT16, INT8) RIFF WAV format. You can register new sound data in D&D. Double-click to play a sound. If you want to stop the sound, wait for the playback to finish or press the ■ button on the left toolbar to stop it. More on that later.



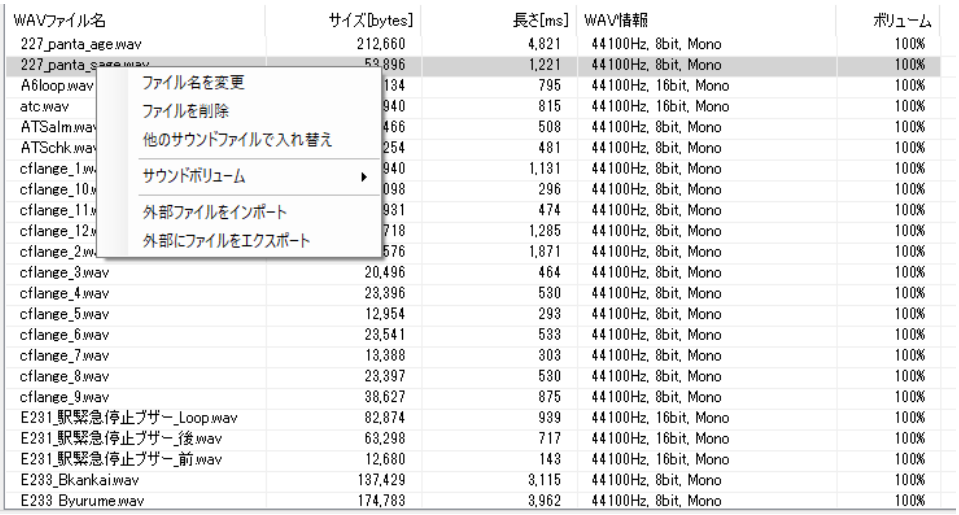
Meitetsu1000_rev0.5.ssdx - DSSP 20230831

	コマンド	パラメータ1	パラメータ2	パラメータ3
0	フロー呼出し	sf_f0.csv	F0	
1	フロー呼出し	sf_f1.csv	F1	
2	フロー予約	名鉄1000警笛.csv	F2	
3	フロー予約	musicHone.csv	F3	
4	フロー予約	名鉄EB.csv	F4	
5	フロー予約	sf_emg.csv	F5	
6	フロー予約	名鉄車掌合図.csv	F6	
7	フロー予約	sf_vol_master.csv	F7	
8	フロー予約	sf_railjoint.csv	F8	
9	フロー予約	sf_lb.csv	F9	
10	フロー予約	sf_crvflange.csv	F10	
11	フロー予約	sf_door2.csv	F11	
12	フロー予約	sf_door1.csv	F12	
13	フロー予約	sf_doorベル.csv	F13	
14	フロー予約	名駅発車ベル_豊橋方.csv	F15	
15	フロー予約	名駅発車ベル_中ホーム.csv	F16	
16	フロー予約	CP強制起動.csv	F18	
17	フロー予約	名鉄4点チャイムA.csv	F19	
18	フロー予約	名鉄4点チャイムB.csv	F20	
19	【ラベル】	mainloop		
20	コメント	4sec		
21	ウエイト	4000ms		

Unknown decoder/firmware Not Found SmileSound

Figure 7.6.1 List of Soundflows

The sound data can be adjusted for sound volume. You can adjust the volume by selecting the sound data and selecting the sound volume from the right click.



WAVファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム
227_panta_age.wav	212,660	4,821	44100Hz, 8bit, Mono	100%
227_panta_sage.wav	53,896	1,221	44100Hz, 8bit, Mono	100%
A6loop.wav	134	795	44100Hz, 16bit, Mono	100%
atc.wav	940	815	44100Hz, 16bit, Mono	100%
ATSalm.wav	466	508	44100Hz, 8bit, Mono	100%
ATSchk.wav	254	481	44100Hz, 8bit, Mono	100%
cflange_1.w	940	1,131	44100Hz, 8bit, Mono	100%
cflange_10.	098	296	44100Hz, 8bit, Mono	100%
cflange_11.	931	474	44100Hz, 8bit, Mono	100%
cflange_12.	718	1,285	44100Hz, 8bit, Mono	100%
cflange_2.w	576	1,871	44100Hz, 8bit, Mono	100%
cflange_3.wav	20,496	464	44100Hz, 8bit, Mono	100%
cflange_4.wav	23,396	530	44100Hz, 8bit, Mono	100%
cflange_5.wav	12,954	293	44100Hz, 8bit, Mono	100%
cflange_6.wav	23,541	533	44100Hz, 8bit, Mono	100%
cflange_7.wav	13,388	303	44100Hz, 8bit, Mono	100%
cflange_8.wav	23,397	530	44100Hz, 8bit, Mono	100%
cflange_9.wav	38,627	875	44100Hz, 8bit, Mono	100%
E231_駅緊急停止ブザー_Loop.wav	82,874	939	44100Hz, 16bit, Mono	100%
E231_駅緊急停止ブザー_後.wav	63,298	717	44100Hz, 16bit, Mono	100%
E231_駅緊急停止ブザー_前.wav	12,680	143	44100Hz, 16bit, Mono	100%
E233_Bkankai.wav	137,429	3,115	44100Hz, 8bit, Mono	100%
E233_Byurume.wav	174,783	3,962	44100Hz, 8bit, Mono	100%

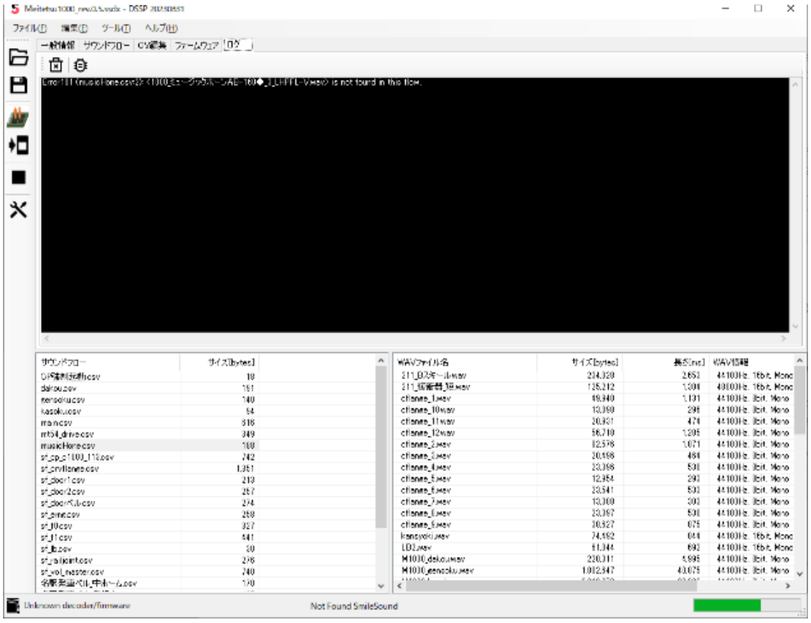
Figure 7.6.2 Changing and Adjusting Sound Data

Table 7.6.1 Pop-up menu on the sound data screen

Menu items	explanation
Rename the file	Rename the sound data. Please note that the file name in the Soundflow will not be automatically corrected.
Delete files	Deletes sound data from sound data. Please note that the file name in the Soundflow will not be automatically corrected.
Replace with other sound files	Replace the sound data with another sound data. The file name you write in the soundflow is automatically corrected.
Sound volume	You can adjust the volume of sound data, making it louder or lower.
Import external files	Import new sound data into sound data.
Export files externally	Export the selected sound data externally. Please be very careful with copyright. If you use sound data beyond the default scope, you may be punished by law.

7.7.log

If the soundflow is experiencing an error, the log displays an error state. In addition, the operation status may be recorded. You can use it when a problem occurs.



Meitetsu1000_rev0.5.ssdx - DSSP 20230531
ファイル(F) 編集(E) ツール(T) ヘルプ(H)
一般情報 サウンドフロー CV編集 ファームウェア ログ

```
Error111 (musicHone.csv:2) <1000_ミュージックホーンAB-180◆_3_LHPFL-V.wav> is not found in this flow.
```

サウンドフロー	サイズ[bytes]
OP[illegible].csv	18
dakou.csv	151
gensoku.csv	140
kasoku.csv	94
main.csv	616
mt54_drive.csv	349
musicHone.csv	188
sf_cp_c1000_113.csv	742
sf_cvHone.csv	1,351
sf_door1.csv	213
sf_door2.csv	257
sf_doorベル.csv	274
sf_emt.csv	258
sf_f0.csv	327
sf_f1.csv	441
sf_fb.csv	30
sf_railjoint.csv	276
sf_vol_master.csv	740
名駅発車ベル_中ホーム.csv	170

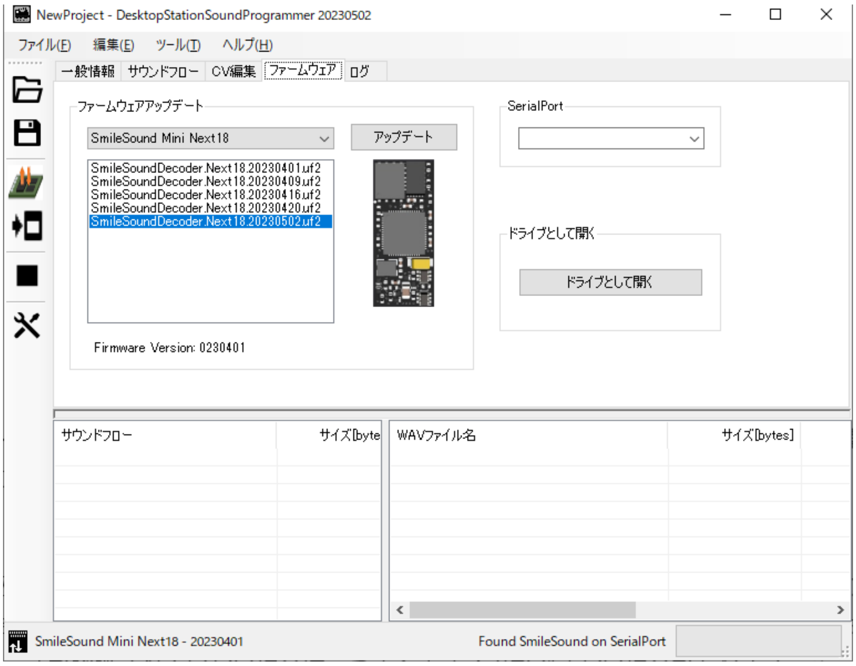
WAVファイル名	サイズ[bytes]	長さ[ms]	WAV情報
211_Bスキール.wav	234,020	2,653	44100Hz, 16bit, Mono
211_[illegible].wav	125,212	1,304	48000Hz, 16bit, Mono
change_1.wav	49,940	1,131	44100Hz, 8bit, Mono
change_10.wav	13,090	296	44100Hz, 8bit, Mono
change_11.wav	20,931	474	44100Hz, 8bit, Mono
change_12.wav	56,710	1,285	44100Hz, 8bit, Mono
change_2.wav	82,576	1,871	44100Hz, 8bit, Mono
change_3.wav	20,496	464	44100Hz, 8bit, Mono
change_4.wav	23,398	530	44100Hz, 8bit, Mono
change_5.wav	12,954	293	44100Hz, 8bit, Mono
change_6.wav	23,541	533	44100Hz, 8bit, Mono
change_7.wav	13,300	301	44100Hz, 8bit, Mono
change_8.wav	23,397	530	44100Hz, 8bit, Mono
change_9.wav	30,827	675	44100Hz, 8bit, Mono
kansyoki.wav	74,492	844	44100Hz, 16bit, Mono
LD2.wav	61,044	692	44100Hz, 16bit, Mono
M1000_dakou.wav	220,311	4,995	44100Hz, 8bit, Mono
M1000_gensoku.wav	1,012,847	40,075	44100Hz, 8bit, Mono

Unknown decoder/firmware   Not Found SmileSound

Figure 7.7.1 Example of an error in the Logs tab

7.8.firmware

This is the screen for updating the firmware of the connected SmileSound. Firmware is published in combination with DSSP, so it is recommended to update DSSP regularly and update the latest firmware if it is released. In the bottom left corner, you can see the firmware version of the SmileSound decoder connected to the USB writer for easy verification.



NewProject - DesktopStationSoundProgrammer 20230502
ファイル(F) 編集(E) ツール(T) ヘルプ(H)
一般情報 サウンドフロー CV編集 ファームウェア ログ
ファームウェアアップデート
アップデート
SerialPort
ドライブとして開く
ドライブとして開く
サウンドフロー
サイズ[byte
WAVファイル名
サイズ[bytes]

SmileSound Mini Next18

SmileSoundDecoder.Next18.20230401.uf2
SmileSoundDecoder.Next18.20230409.uf2
SmileSoundDecoder.Next18.20230416.uf2
SmileSoundDecoder.Next18.20230420.uf2
SmileSoundDecoder.Next18.20230502.uf2

Firmware Version: 0230401

SmileSound Mini Next18 - 20230401   Found SmileSound on SerialPort

Figure 7.8.1 Firmware Screen

8.Soundflow

8.1.At first

SmileSound stores the user-created programs in the flash memory inside the decoder and can be freely operated within the specifications and functions described in this chapter. Sound data in ssdx format published in Sound Data for SmileSound is created using the commands listed here. The ssdx format is the exclusive sound data for SmileSound. Please note that competitor sound data is encrypted and specialized, and cannot be used by DSSP at all because it is protected by law.

Programs that run on SmileSound are called "Soundflows". Soundflows can be written in CSV format and can also be created in a text editor.

You can refer to the sound data published in Sound Data for SmileSound to create your own sound data.

8.2.File formats available with Soundflow

The following file formats are available for programming Soundflows: Soundflow basically only uses CSV and WAV files internally. The file that packs this is the ssdx. In addition to this, there are administrative files that DSSPs generate on their own, but they are not required for the user to use.

Table 8.2.1 Files that can be used with Soundflow and their requirements

File Types	Required Specifications	remarks
CSV	UTF-8 format, text format, comma-separated	Double quotation not available
WAV	RIFF-WAVE, uncompressed (linear PCM), Sampling Rate: 32kHz,16kHz,8kHz, Number of bits: 16bit or 8bit Mono only	Tagged files are not available Except for the Float format, it is automatically converted in DSSP.
ssdx	A sound data format independently developed by Desktop Station Co., Ltd.	Available with import function

8.3.Screen Description

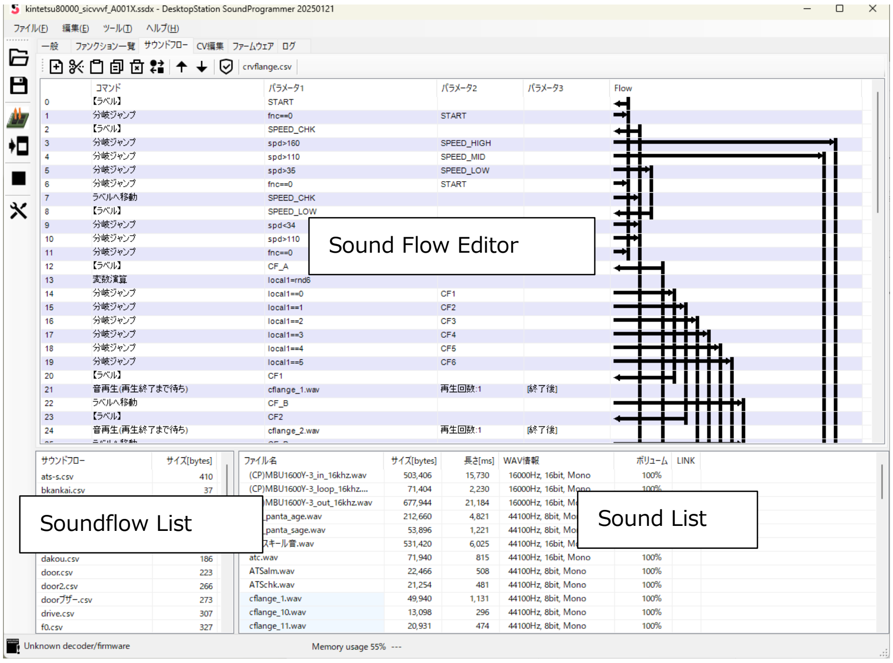
The Soundflow editing screen consists of three main screens, as shown below. Soundflow editor, Soundflow list, and sound list.

The Soundflow List displays a list of soundflows registered in the Sound Data. Select a soundflow from this list of soundflows and edit the actual movement and other things in the Soundflow editor.

The Soundflow Editor is a screen that edits sound programs written in Soundflow, and commands are arranged in order from the top to achieve the desired movement while forming conditional branching and sound playback commands.

The sound list indicates the WAV file (sound source file) registered in the sound data.

Figure 8.3.2 shows the meaning of the icon in the editing toolbox. Besides this, right-clicking will bring up a pop-up menu. There are also keyboard shortcuts.



	コマンド	パラメータ1	パラメータ2	パラメータ3
0	【ラベル】	START		
1	分岐ジャンプ	fnc==0	START	
2	【ラベル】	SPEED_CHK		
3	分岐ジャンプ	spd>160	SPEED_HIGH	
4	分岐ジャンプ	spd>110	SPEED_MID	
5	分岐ジャンプ	spd>35	SPEED_LOW	
6	分岐ジャンプ	fnc==0	START	
7	ラベルへ移動	SPEED_CHK		
8	【ラベル】	SPEED_LOW		
9	分岐ジャンプ	spd<34		
10	分岐ジャンプ	spd>110		
11	分岐ジャンプ	fnc==0		
12	【ラベル】	CF_A		
13	変数演算	local1=rnd6		
14	分岐ジャンプ	local1==0	CF1	
15	分岐ジャンプ	local1==1	CF2	
16	分岐ジャンプ	local1==2	CF3	
17	分岐ジャンプ	local1==3	CF4	
18	分岐ジャンプ	local1==4	CF5	
19	分岐ジャンプ	local1==5	CF6	
20	【ラベル】	CF1		
21	音再生(再生終了まで待ち)	cflange_1.wav	再生回数:1	[終了後]
22	ラベルへ移動	CF_B		
23	【ラベル】	CF2		
24	音再生(再生終了まで待ち)	cflange_2.wav	再生回数:1	[終了後]

サウンドフロー	サイズ[bytes]
ats-s.csv	410
bkankai.csv	37
dakou.csv	186
door.csv	223
door2.csv	266
doorブザー.csv	273
drive.csv	307
f0.csv	327

ファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム	LINK
(CP)MBU1600Y-3_in_16khz.wav	503,406	15,730	16000Hz, 16bit, Mono	100%	
(CP)MBU1600Y-3_loop_16khz....	71,404	2,230	16000Hz, 16bit, Mono	100%	
)MBU1600Y-3_out_16khz.wav	677,944	21,184	16000Hz, 16bit, M		
_panta_age.wav	212,660	4,821	44100Hz, 8bit, Mo		
_panta_sage.wav	53,896	1,221	44100Hz, 8bit, Mo		
スキール音.wav	531,420	6,025	44100Hz, 16bit, M		
atc.wav	71,940	815	44100Hz, 16bit, Mono	100%	
ATSalm.wav	22,466	508	44100Hz, 8bit, Mono	100%	
ATSchk.wav	21,254	481	44100Hz, 8bit, Mono	100%	
cflange_1.wav	49,940	1,131	44100Hz, 8bit, Mono	100%	
cflange_10.wav	13,098	296	44100Hz, 8bit, Mono	100%	
cflange_11.wav	20,931	474	44100Hz, 8bit, Mono	100%	

Figure 8.3.1 DSSP Soundflow Screen

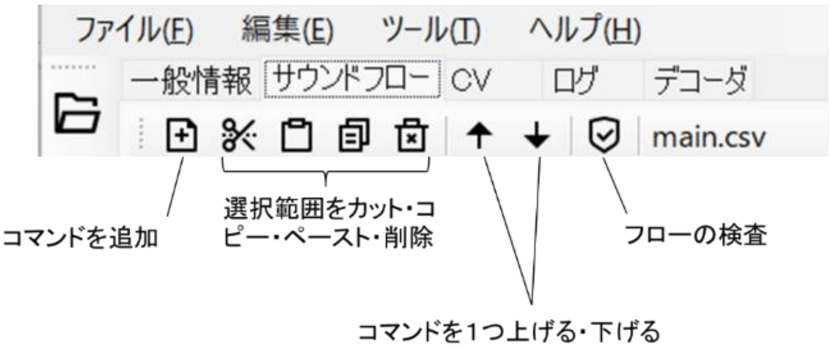


Figure 8.3.2 Editing Toolbox in Soundflow Editor

8.4.Creation and execution rules

Soundflow works according to the following rules:

- The script runs all the time after it is loaded.
- When the decoder is powered on, the main.csv is always loaded first and starts running after the startup completion process, regardless of the DCC signal. By describing the process of calling each CSV in the main.csv, various functions can be realized.
- The sound program (Soundflow) described in the CSV can run 16 slots (16 Soundflows) at the same time.
- The called soundflow is automatically assigned to an empty slot.
- Unused flows (slots) have the function of automatically terminating, so you don't need to be aware of them.
- There is also a command (exit) to open the assigned flow (slot).

- It can play 12 sounds at the same time. However, two of them are occupied by the vapor sound function.
- At all times with a 0.1 second cycle, the soundflow runs from top to bottom rows.
- Sound files are compatible with 8-bit and 16-bit mono 32kHz, 16kHz, and 8kHz RIFF WAVE files (LPCM). By using DSSP, when writing to the decoder, it is automatically converted to a sampling rate that the SmileSound firmware can handle. Please do not add information such as tags.
- State transitions are written on the script. Create a waiting condition for state transitions with if and goto. Once the if conditional expression is established, it is a form of transition.
- One CSV script can have up to 128 rows.
- In addition to sound, it is equipped with AUX operation, speed limiter, and various variable functions.
- Even without a DCC signal, you can still move the sound flow. However, functions related to the DCC signal (function, speed, direction of travel, etc.) cannot be used.

8.5.Editing method and principle of operation

Soundflow is the same principle as the main function in C, and the soundflow named main.csv is always called at the very beginning. Therefore, be sure to place a main.csv in the sound data. If there is no main.csv in the sound data, the decoder will not start normally. main.csv is activated and called when the DCC power is turned on or when the analog power supply is applied at least 7V. Therefore, even if it is not DCC, if the power supply is provided to the decoder, it will automatically start and operate. This means that the DCC command station is not required during the SmileSound startup process.

When you invoke a soundflow, you can assign a function number. Soundflow and function will have a 1:1 relationship.

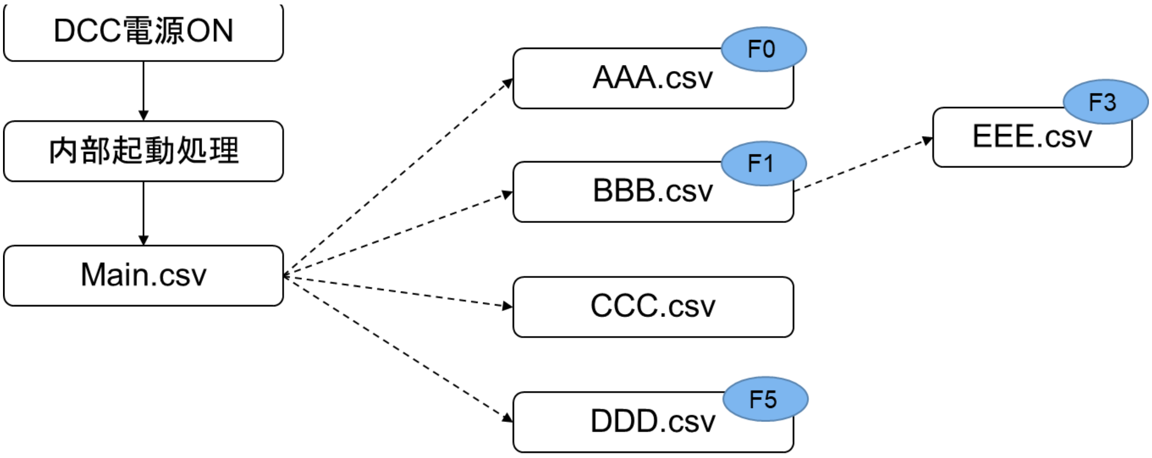
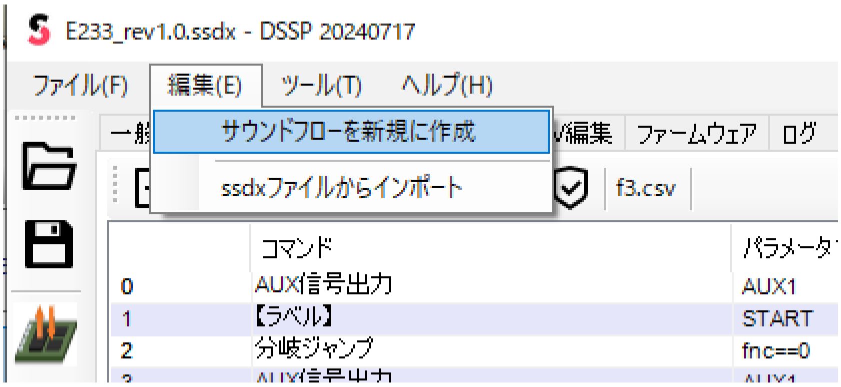


Figure 8.5.1 Soundflow Operating Order

8.6.Create a new soundflow

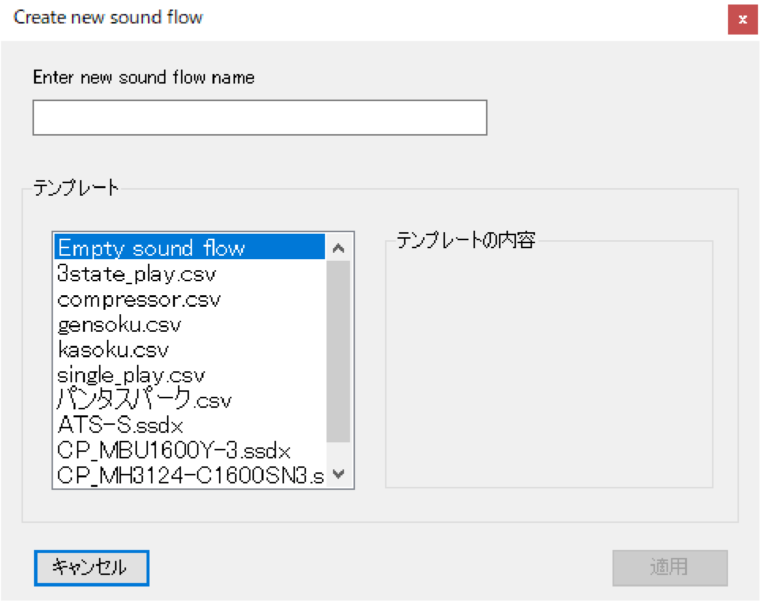
To create a new Soundflow, you need to select "Create New Soundflow" from the edit menu. You can also import sound flow and sound data from another sound data (SSDX format).


E233_rev1.0.ssdx - DSSP 20240717
ファイル(F)
編集(E)
ツール(T)
ヘルプ(H)
サウンドフローを新規に作成
ssdxファイルからインポート
一般
編集
ファームウェア
ログ
f3.csv

	コマンド	パラメータ
0	AUX信号出力	AUX1
1	【ラベル】	START
2	分岐ジャンプ	fnc==0

Figure 8.6.1 Create a new soundflow

There are two ways to create a soundflow: from a completely new file (Empty sound flow) or from a soundflow that is already available as a template. Choose your preferred method.



Enter the name of the soundflow and press the "Apply" button to add a new soundflow to the open sound data.

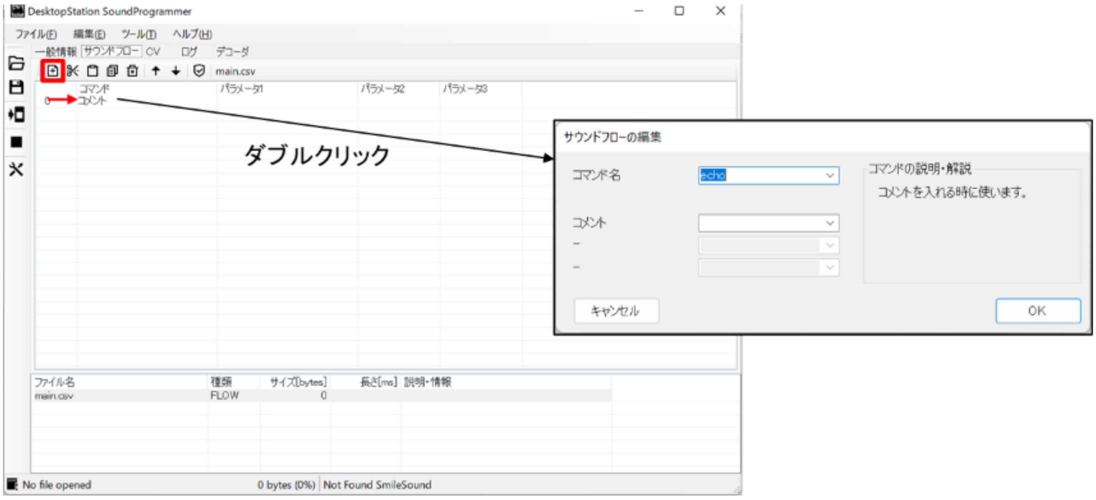
8.7.Adding, editing, and removing commands

To add commands to a soundflow, right-click and select "Add Flow Item" or click the "Add Command" icon to add more commands.

If you want to change an existing command, you can double-click the command to edit it and change the command or change the parameters.

If you want to remove an existing command from the Soundflow, you can do so by pressing Delete or Ctrl+C to make a cut.

You can also select one or more soundflows and copy them to the clipboard. You can also paste the command data of the soundflow on the clipboard. When using it with an external text editor, the soundflow's dedicated identifier will be placed on the first line, so don't remove it.



コマンド名 echo

コメント

コマンドの説明・解説

コメントを入れる時に使います。

ファイル名	種類	サイズ[bytes]	長さ[ms]	説明・情報
main.csv	FLOW	0		

No file opened 0 bytes (0%) Not Found SmileSound

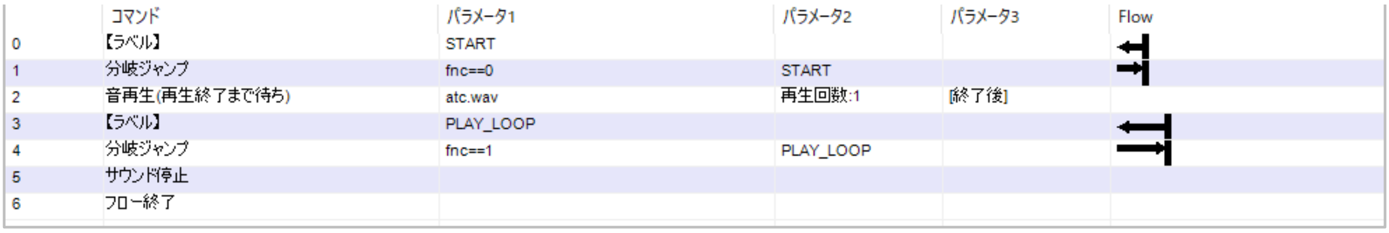
Figure 8.7.1 How to add commands

8.8.Labels and conditional branching

Labels are used frequently to define the target position when jumping, for example, using the if command.

By writing the "Wait for function operation" operation, you can describe the movement corresponding to the function. In the example below, depending on whether the function state is ON or OFF, it is a waiting motion.

The variables that can be used for parameter 1 of conditional branching are all shown in section 8.9.



	コマンド	パラメータ1	パラメータ2	パラメータ3	Flow
0	【ラベル】	START			←
1	分岐ジャンプ	fnc==0	START		→
2	音再生(再生終了まで待ち)	atc.wav	再生回数:1	[終了後]	
3	【ラベル】	PLAY_LOOP			←
4	分岐ジャンプ	fnc==1	PLAY_LOOP		→
5	サウンド停止				
6	フロー終了				

Figure 8.8.1 Example of creating conditional branching

Table 8.8.1 conditional branch operator

operator	Meaning of Operator	example
==	When left and right are the same	spd==0
>=	When the left is more than the right	acc>=1
<=	When the right is more than the left	acc<=-1
>	When the left is bigger than the right	ref>0
<	When the right is	ref<128

	greater than the left	
!=	When left and right are different	fnc!=1

8.9.How to end a flow

There are multiple ways to perform and end a soundflow. Some processes may require you to complete them (e.g., CP). Therefore, there are three main ways to end a flow, as shown below, and you can choose for yourself depending on the features you want to implement in your soundflow.

Table 8.9.1 Example of how a flow ends

How to end a flow	Corresponding commands	explanation
Back to top	ret	In the case of repeated movement processes.
End a flow	exit or do not describe	Non-repeating processing, for soundflows called on date.
Return to any location (jump)	goto	In the case of repeated movement processing, if there is a problem when returning to the beginning

8.10. List of Variables

A variable is one of the identifiers that expresses a value that changes in a soundflow. For example, the current driving speed is expressed in English, such as SPD, which is used to change movement in the soundflow depending on the condition. The only variable names that can be used in Soundflow are the variables listed below, and users cannot add or change them freely.

Also, as a general rule, variables are used in the if command. Only some commands can be used for arguments. Please check the description of the available commands to that effect.

Table 8.10.1 List of Soundflow Variables

Defined variables	alias	explanation	Value range	Use Cases
local	Local Variables	Variables that can be used within the soundflow being called	0-65535	local1,local2, … local8
share	Shared variables	Variables that can be used in the soundflow of the entire decoder	0-65535	share1,share2, … share8
spd	Current Speed	The speed at which the vehicle is running	0-255	spd
ref	Instruction speed	During acceleration and deceleration, there is a deviation from the current speed	0-255	ref
fnc	Function	Indicates the function state assigned to the Sound Flow by 0 (OFF) or 1 (ON). You cannot check the status of a specific function number.	0-1	fnc,fnc0,fnc1, … fnc32

aux	AUX Status	Indicates the AUX output state as 0 (OFF) or 1 (ON).	0-1	aux1,aux2… aux6
tmr	Timer	Timers that can be used within the soundflow you are calling. If you set a value of 1 or more, it will decrease by 1 every second.	0-65535	tmr1,tmr2… tmr4
acc	Acceleration and Reduction	Positive value when accelerating, negative value when decelerating	0-255	acc
dir	Direction	Go straight at 0, reverse at 1	0-1	dir
cv	CV settings	CV is in the CV1-CV256 range.	0-255	cv1, …,cv256
rnd	Random Variables	A variable that returns a random value. rnd1-rnd100 can be used.	0-100	rnd1…,rnd100
emg	Emergency braking state variables	When in emergency braking mode, it becomes 1. Normally, it is 0.	0-1	emg
vol	Sound volume	Returns the volume that is playing in the current soundflow. It is not the master volume (the volume of all sounds).	0-255	vol

8.11. List of commands

The commands available in Soundflow are listed below.

Table 8.11.1 List

command	explanation
aux	AUX output
auxs	AUX Output Voltage Regulation
call	Instant soundflow readout
cv	Dynamically rewrite any CV on RAM
cxif	Clearing all always-on monitoring condition branching ifs
date	Readout when operating a function of a sound flow
dirx	Direction of travel restrictions
echo	echo
emg	Emergency Brake Setting
exit	Sound Flow End
flsh	Save CV on RAM to flash memory
if	Conditional branch if
goto	Go to label instantly
label	Label Settings
let	Calculating variables and numbers

monf	Monitoring Function Number Settings
play	Sound playback (with weights)
plyx	Sound playback (no weight)
pit	Setting the playback pitch
ret	Jump to the top
set	Set values for variables
spdx	Lower speed limit (substantial speed designation)
sply	Acceleration and deceleration sound linked sound playback
srvo	Servo motor control function (with drive completion weight)
srvx	Servo motor control function (no weight)
stm	Setting the Steam Sound
stmc	Clear the Steam Sound Settings
stms	Time adjustment for steam sound
stmp	Pausing Steam Sounds
stop	Stop the sound
slim	Speed Limits
vol	Sound volume settings in Soundflow
volm	Overall sound volume settings
wait	weight
wrnd	Random Weights
xif	Creating a Constant Monitoring Conditional Branch If

8.12. How to use the main commands

8.12.1.aux

Turn the headlights, taillights, and AUX outputs on and off. The AUX command performs the operation one by one. If you want to operate multiple tasks, please continue to write them.

command	Argument 1	Argument 2	Argument 3
aux	AUX Number (0,255,1-8)	AUX Operation (0 or 1)	-

The AUX number is specified as follows:

AUX Number	definition
0	headlight
255	tail light
1	AUX1
2	AUX2
3	AUX3
4	AUX4
5	AUX5
6	AUX6
7	AUX7
8	AUX8

[Example of entry]

```
aux,0,1
aux,255,0
```

8.12.2.auxs

When the headlight, taillight, and AUX outputs are turned on, the amount of voltage to be output is adjusted. The AUXS command performs the operation one by one. If you want to operate multiple tasks, please continue to write them.

command	Argument 1	Argument 2	Argument 3
auxs	AUX Number (0,255,1-8)	AUX Output Voltage (0-255)	-

The AUX output voltage is defined as follows: Please note that if you set 0, the light will not turn on even if you turn it on with the AUX command. Also, even if you set a value close to 0, the brightness may be difficult to see. It depends on the LED and circuitry, so please refer to the instruction manual of the light unit for details.

AUX Output Voltage	definition
0	Off
1-254	Output intermediate voltage using PWM method

255	Always lit

[Example of entry]

```
auxs,0,128
auxs,1,255
```

8.12.3.call

Invoke and execute other soundflows. Calling other soundflows is not affected by the behavior because they run in parallel. It is used to produce multiple sounds under certain conditions. For example, the sound of brake relief and the horn when starting a vehicle.

command	Argument 1	Argument 2	Argument 3
call	Sound Flow File (CSV)	Assign Function Numbers (0-28)	-

The following example is an example of calling a flow1.csv. If you don't specifically use a function number, set it to 0. If you don't use the if command to manipulate the fnc variable in the soundflow, there is no particular problem.

[Example of entry]

```
call,flow1.csv,2
```

8.12.4.cv

Dynamically change the value of one CV. In SmileSound, CVs are deployed from flash memory to RAM when power is turned on, and internal processes such as sound flow use CVs. This command is a command to rewrite the CV information that has been deployed in RAM.

The values reflected in the CV may or may not be reflected immediately, depending on the specifications of the CV number. Also, this change is cleared and not reflected on power-on if you don't use the flsh command. If you want to use it with the flsh command, please rewrite the CV value you want to change with this command in advance, and then call the flsh command after all the changes are completed. It is not recommended to call the flsh command in conjunction with this command every time.

command	Argument 1	Argument 2	Argument 3
cv	CV Number (1-256)	CV Value (0-255)	-

[Example of entry]

```
cv,157,3
```

8.12.5.cxif

You can clear all the "if at any time" conditions registered in xif.

command	Argument 1	Argument 2	Argument 3
cxif	-	-	-

[Example of entry]

cxif

8.12.6.date

Invoke and execute other soundflows. However, it only loads and works when the assigned function is turned from OFF to ON. Use it for simple functions such as horns and doors.

Calling other soundflows is not affected by the behavior because they run in parallel. It is used to produce multiple sounds under certain conditions. For example, the sound of brake relief and the horn when starting a vehicle.

command	Argument 1	Argument 2	Argument 3
date	Sound Flow File (CSV)	Assign Function Numbers (0-28)	-

Here is an example of calling a flow1.csv. If you don't specifically use a function number, set it to 0. If you don't use the if command to manipulate the fnc variable in the soundflow, there is no particular problem.

[Example of entry]

date,flow1.csv,2

8.12.7.dirx

This is a command to limit the direction of travel. In effect, you can also specify the direction of travel.

command	Argument 1	Argument 2	Argument 3
dirx	Direction of Progress (0: Release, 1: FWD, 2: REV)	-	-

[Example of entry]

dirx,1

8.12.8.echo

Indicates a comment line. We do not take any special treatment. It will be ignored.

command	Argument 1	Argument 2	Argument 3
echo	comment	-	-

Example of a comment.

[Example of entry]

echo, comment.

8.12.9.emg

Emergency braking (emergency stop) can be turned on and off. It operates separately from the upper speed command (slim) and the lower speed command (spdx), so it automatically resumes when the emergency braking is released.

When emergency braking is turned on, it will decelerate and stop rapidly in 1/5 of the speed set by CV4. The stop state is held until emergency braking is turned off.

command	Argument 1	Argument 2	Argument 3
emg	0 or 1	-	-

If you specify 1 for argument 1, turn on emergency braking. If 0 is specified, the emergency braking is released. Be sure to release the emergency braking after the motor is stopped. When the emg command is set to emergency braking (ON), the emg variable is 1. If etc. can be used to determine whether emergency braking is in progress. When emergency braking is off, the emg variable is 0.

[Example of entry]

emg,1

8.12.10.exit

End the soundflow and free up the slot you were using. It cannot be reopened. Note that even if you don't fill in an exit, the same process will automatically work as an exit when you reach the end of the soundflow. If you don't want it to end, put goto etc. at the end of the script.

command	Argument 1	Argument 2	Argument 3
exit	-	-	-

[Example of entry]

exit,

8.12.11.flsh

Write the CV data managed internally to flash memory and reflect it the next time you power it is powered on. It is usually used in combination with the cv command.

This command will cause the sound to be cut off for a moment, as the process of writing to the flash memory will work first. Please note.

command	Argument 1	Argument 2	Argument 3
flsh	-	-	-

[Example of entry]

```
flsh,
```

8.12.12.if

When the conditions are met, jump to the specified label. If you omit the destination label when the condition is false, you will execute the command following the if statement in order. For example, if you want to create a state transition using multiple if commands, you can try omitting the destination label for false times.

command	Argument 1	Argument 2	Argument 3
if	condition	Destination label of true time	Destination label at the time of fake (optional)

The conditions include various variables (Table 8.9.1) can be used. An example of jumping by a function operation. Here is an example when the monitoring function is turned on.

[Example of entry]

```
label,START
if,fnc==1,SOUND_ON,START
~Other Commands~
label,SOUND_ON
~Other Commands~
label,SOUNDLOOP
if,fnc==0,SOUND_OFF,SOUNDLOOP
label,SOUND_OFF
goto
```

8.12.13.goto

Jump to the destination label.

command	Argument 1	Argument 2	Argument 3
goto	Destination	—	—

	label name		

The example is an example of jumping to the TEST label.

[Example of entry]

goto,TEST
~Other Commands~
label,TEST

8.12.14.label

It sets the position that jumps from the goto or if commands.

command	Argument 1	Argument 2	Argument 3
label	Label Name	-	-

Example of jumping to TEST

[Example of entry]

goto,TEST
～～～
label,TEST

8.12.15.let

A command for assigning values to user-configurable variables. Only simple formulas are supported.

command	Argument 1	Argument 2	Argument 3
let	Substitution Formula (described later)		

The variables on the left that can be used for assignment expressions are:

Variable types	Variable Explanation	Scope of use	Value range
local	Variables that are only available within the flow. It is cleared when the flow ends.	local1~local8	0-65535
share	Shared variables Variables that can be used in the soundflow of the entire decoder	share1~share8	0-65535
tmr	Timer variable. When you set a value, the value decreases every second,	tmr1~tmr4	0-255

	and when it reaches 0, the value does not decrease.		

The assignment expression gives a statement like this:
local2=5+1

You can't use parentheses.

× let,share3=(1+9)*2

You can use the number on the right as a variable.
let,share1=share1+10
In addition to assignable variables, variables on the right can also be used in the if command, such as spd and acc.
let,share2=share2+acc

8.12.16.monf

You can change the function number that the fnc variable used in the soundflow if command monitors. For example, it is used to create a function function for each sound flow. The default is function 0 (F0).

command	Argument 1	Argument 2	Argument 3
monf	Monitor Function Numbers (0-32)	-	-

An example of setting function 8 (F8) to monitor with this soundflow. The fnc variable will now automatically monitor F8.

[Example of entry]

monf,8

8.12.17.play

This is a command that plays a sound. The function equivalent to wait is automatically set inside, and the next line of the play command does not transition until just before the end of playback.

command	Argument 1	Argument 2	Argument 3
play	WAV File Name	Number of loops (0 infinite loops, 1-100 loops)	Regeneration (1 or 0)

If you want to play the loop, set the loop ON/OFF argument to 0. If you want to play only once, put 1. If you put 2, it will play twice. You can specify up to 100 times. In the play command, if you want to play the WAV file immediately, put 1 in the instant play argument. If there is a sound that is already playing in this soundflow, put 0 in the instant play argument if you are okay with stopping it and then playing it.
If this command is called while other sounds are playing in a loop, it will switch to this WAV file at the moment when the WAV file ends playback.

[Example of entry]

```
play,seibuaw_in.wav,1,0
echo,playwav
play,seibuaw_loop.wav,0,0
```

8.12.18.plyx

This is a command that plays a sound. There is no wait to play weight function like the play command, and it will transition to the next line immediately after playback. Please use it if you want to achieve complex stop control and movement methods while playing. Except for the weights, the function is the same as the play command.

command	Argument 1	Argument 2	Argument 3
plyx	WAV File Name	Number of loops (0 infinite loops, 1-100 loops)	Regeneration (1 or 0)

If you want to play the loop, set the loop ON/OFF argument to 0. If you want to play only once, put 1. If you put 2, it will play twice. You can specify up to 100 times. In the play command, if you want to play the WAV file immediately, put 1 in the instant play argument. If there is a sound that is already playing in this soundflow, put 0 in the instant play argument if you are okay with stopping it and then playing it.
If this command is called while other sounds are playing in a loop, it will switch to this WAV file at the moment when the WAV file ends playback.

[Example of entry]

```
plyx,seibuaw_in.wav,1,0
```

8.12.19.pit

This is a command to change the sound playback pitch (playback speed). It is used to adjust the sound of the motor or machine shaft according to speed, such as coasting sound.

command	Argument 1	Argument 2	Argument 3

pit	Pitch (direct price)	-	-
pit	Lower Pitch Limit	Pitch Limit	-

If you only give argument 1, change it to that playback pitch, regardless of speed. If you put a pitch value in arguments 1 and 2, the pitch will automatically switch according to the speed. The lower pitch limit must be less than the upper pitch value.
The pitch will be the standard playback speed if you give it 1024. The lowest value is 32 (about 3% playback speed) and the maximum value is 2048 (twice the playback speed). If you set a pitch limit, the sound of the corresponding soundflow slot will be played at the lower playback speed when stopped, the maximum speed at the maximum speed, and half the upper and lower limit at 50% speed.
Please note that the playback pitch cannot be adjusted for each sound file.
When I run the pit command, it will be reflected immediately. If the pitch is changed regardless of the speed, the automatic switching according to the speed is immediately turned off.

[Example of entry]

```
pit,512,1024
play,dakou_loop.wav,1,0
```

[Example of entry]

```
pit,684
play,beep.wav,0,0
```

8.12.20.ret

This is the command to go back to the beginning of the soundflow. Regardless of where it is written, it will return to the beginning of the soundflow. After returning, the execution continues. If you want to stop or end the sound flow, use the exit command.

command	Argument 1	Argument 2	Argument 3
ret	-	-	-

No matter where you put it, you can go back to the beginning of the soundflow.

[Example of entry]

```
ret
```

8.12.21.set

A command that stores a value in a variable that can be changed by the user.

command	Argument 1	Argument 2	Argument 3

set	Variable Name	Values to set	

The values that can be set for a variable depend on the variable.

Variable types	Variable Explanation	Scope of use	Value range
local	Variables that are only available within the flow. It is cleared when the flow ends.	local1～local8	0-65535
share	User variables that can be shared and used with other soundflows	share1～share8	0-65535
tmr	A timer variable that automatically decreases every second when the value is set.	tmr1～tmr4	0-255
cv	CV settings	cv1-cv1024	0-255

[Example of entry]

set,local1,100

8.12.22.spdx

This is a command that sets the lower speed limit. It can also be used instead of a command without receiving a speed command and automatically driving.

command	Argument 1	Argument 2	Argument 3
spdx	Lower Speed (0-255)	-	-

[Example of entry]

spdx,30

8.12.23.sply

This is a command that plays sound in conjunction with the speed. The length of the WAV file to be played is set to 100%, and the playback start position is automatically changed according to the speed. Note that the sound stops automatically when acceleration is over.

command	Argument 1	Argument 2	Argument 3
sply	WAV File Name	-	-

When implementing VVVVF sound for a competing sound decoder, the acceleration and deceleration sound WAV file must be divided into 6 or 8 parts to match the speed step by step. However, by splitting it, the sound continues to come out even though the acceleration has

stopped, and it is difficult to reproduce a little acceleration. By using this command sply provided by SmileSound, you can play WAV files as if they were infinitely divided according to the speed and acceleration and deceleration state.
When using this command, you need to set the length (playback time) and acceleration time (CV3) and deceleration time (CV4) of the WAV file to the same time as the speed link. If it is off, it does not work well with the speed.
The following examples represent accelerated and decelerated soundflows. Both can be implemented to be loaded just before the motor is driven, or the call is made in conjunction with the sound ON.

[Example of entry (acceleration)]

```
label,START
if,spd<1,START
if,acc<=1,START
sply,E233_kasoku.wav,
goto,START
```

[Example of entry (deceleration)]

```
label,START
if,spd<2,START
if,acc>=-1,START
sply,E233_gensoku.wav,
goto,START
```

8.12.24.srvo

[Firmware available from September 1, 2024 or later]

This is a command to control the RC servo motor. It can run a 3.3V driveable RC servo motor connected to the AUX3, 4, 5, 6, 7, and 8. Since a VCC terminal (3.3V internal power supply) is required for servo motor power, it can only be used with the SmileSound Standard MTC21 and Sound Development Board with externally suppliable terminals.

Automatically inserts the weight until the servo is driven completely. If you don't want to insert weights, use the srvx command.

Use the AUX signal that drives the servo at the logic level. For power output, a pull-up resistor with VCC is required, but it is not supported because it may cause unexpected operation due to circuit complexity.

Note: The initial position is not remembered by CV, etc., so be sure to return to the initial position after playing. If the motor is in a different position at start-up, the motor may suddenly start moving to the initial position during reboot or power-on.

command	Argument 1	Argument 2	Argument 3
srvo	Axis Number (0-5)	Angle (0-180)	Speed (1-255)

The axis numbers correspond to AUX as follows: The AUX that is not in use can be controlled by light. The AUX used in the light control cannot be used for servos. Please manage your own exclusion.

AUX Terminals	Axis Number
AUX3	0
AUX4	1
AUX5	2
AUX6	3
AUX7(Servo/Sensor2)	4
AUX8(Servo/Sensor1)	5

The angle can be specified from 0 degrees to 180 degrees. Since the angle information is not remembered inside the decoder when the power is turned off, if the srvo command is used for the first time from start-up, the servo motor may suddenly start moving.

The speed is 255, and it moves 180deg in about 0.8 seconds. If you specify 1, it will take about 12 seconds to move 180deg.

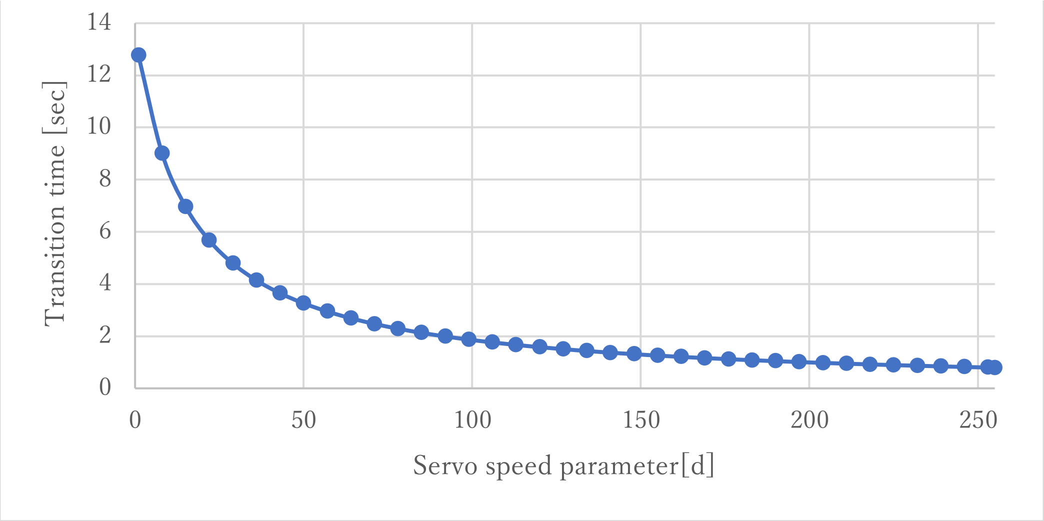


Figure 8.12.24.1 Relationship between speed parameters and 180deg transition time

The analog servo motor uses a power supply (3.3V VCC on SmileSound), PWM signal lines (AUX3,4,5,6,7,8 at the logic level) and GND.

Table 8.12.24.1 Wiring colors of servo motors and their meanings

Signal Name	Wiring color	Description of the function

GND	tea	Connect to the decoder's GND pad
VCC	red	Connect to the decoder's VCC pad (3.3V)
PWM	orange	Connect to one of the decoders: AUX3, AUX4, AUX5, AUX6, AUX7, or AUX8. Please use the logic output output by the decoder.

[Example of entry]

```
srvo,1,90,200
```

8.12.25.srvx

[Firmware available　from February 2, 2025 or later]

The basic operation is the same as that of the srvo command, but when the command is executed, it starts driving the servo and immediately transitions to the next command. It does not wait until the operation is complete. If you want to move the servo continuously, add weights and adjust it.

command	Argument 1	Argument 2	Argument 3
srvx	Axis Number (0-5)	Angle (0-180)	Speed (1-255)

The use of axis numbers, angles, and velocities is the same as the srvo command. The same goes for the precautions.

[Example of entry]

```
srvx,1,90,200
```

8.12.26.stm

This is the command to set the vapor sound function.

command	Argument 1	Argument 2	Argument 3
stm	WAV File Name	Slot Number (0-3)	-

If you set up four WAV files from slot numbers 0 to 3, the above draft sound will be played in conjunction with the speed according to the time interval set by the stms command.

You can also change it during the soundflow operation. The draft sound can also be changed depending on the speed and situation (e.g. heavy load).

[Example of entry]

```
stm,A-01.wav,0,0
stm,A-02.wav,1,0
```

stm,A-03.wav,2,0
stm,A-04.wav,3,0

8.12.27.stmc

This is a command to clear the steam sound function.

command	Argument 1	Argument 2	Argument 3
stmc	-	-	-

Clear the 4 WAV files set from slot numbers 0 to 3. Practically the vapor sound function can be stopped.

[Example of entry]

stmc,

8.12.28.stms

This is a command that adjusts the time interval at which the sound is played with the steam sound function.

command	Argument 1	Argument 2	Argument 3
stms	1: At the beginning of the ride, 2: At the top speed	Adjustment time (ms)	

At the start of driving, it is approximately 800~1200ms, and at the maximum speed, it is about 50-100ms. Adjustments may be required depending on the vehicle. This command for Soundflow is used, but this value can also be fine-tuned at CV57 (at the start of driving) and CV58 (at maximum speed).

[Example of entry]

stms,1,800,
stms,2,50,

8.12.29.stop

This is a command to stop the sound played by the play command.

command	Argument 1	Argument 2	Argument 3
stop	-	-	-

Whether it's a loop or medium, the sound stops. Note that the sound of other soundflows running at the same time does not stop.

[Example of entry]

stop

8.12.30.slim

This is a command to limit the speed of the motor. When you set a speed limit with this command, the decoder limits it below that speed. It behaves as if the speed command has been switched to the speed limit from the command station. When the speed limit is lower, there is no change. Also, if the speed is set above the speed limit from the command station, the speed will not change above the speed limit.

command	Argument 1	Argument 2	Argument 3
slim	Speed Limit (0-255)	-	-

If you want to stop, set the speed limit to 0. If you want to have no limit (up to maximum speed), specify a speed limit of 255.

[Example of entry]

slim,255

8.12.31.vol

This is a command to adjust the volume of the sound.

command	Argument 1	Argument 2	Argument 3
vol	Volume (0-255, variable)		

If you want to silence, set it to 0. If you want the volume to be standard, specify 255. 50% volume is 127. This command allows variables to be used in argument 1.

[Example of entry]

vol,255

8.12.32.volm

This is a command to adjust the master volume of the sound (the sound volume of the entire decoder). Running the command from any file in the soundflow will adjust the common master volume.

command	Argument 1	Argument 2	Argument 3
volm	Volume (0-255)	-	-

If you want to silence, set it to 0. If you want the volume to be standard, specify 255. 50% volume is 127.

[Example of entry]

volm,127

8.12.33.wait

ms (milliseconds) and wait. It does not affect soundflows running in parallel.

command	Argument 1	Argument 2	Argument 3
wait	Latency (ms)	-	-

Here's an example of waiting 5000 milliseconds.

[Example of entry]

wait,5000

8.12.34.wrnd

ms (milliseconds), wait randomly. It does not affect soundflows running in parallel.

command	Argument 1	Argument 2	Argument 3
wait	Maximum random latency (ms)	-	-
wait	Lower Random Latency (ms)	Maximum random latency (ms)	-

Here is an example of randomly waiting between 0-5000ms and an example of randomly waiting between 1000-2000ms.

[Example of filling (random weight between 0-5000ms)]

wrnd,5000

[Example of filling (random weight between 1000-2000ms)]

wrnd,1000,2000

8.12.35.wspd

The weight time can be set in conjunction with the speed. In terms of the linear equation y=ax+b, a is the velocity-linked weight time, x is the velocity, and b is the offset time.
If you put it in inverse proportional mode (0), the weight will be shortened with each increase in

speed. At maximum speed, wait only for the weight time. For example, on steam locomotives, use it in inverse proportional mode. When in proportional mode (1), the weight increases with each increase in speed. When stopped, wait only for the offset time.

command	Argument 1	Argument 2	Argument 3
wspd	Speed-linked weight time	Inverse Proportion(0) or Proportional(1)	Offset Time

The offset time is set to 0 ms if omitted.

8.12.36.xif

This is a registration function to move the "if at any time" to monitor regardless of the situation. You can register up to 4 conditions. After the fourth time, the registered conditions will be ignored. To clear all the conditions registered in xif, use cxif.

command	Argument 1	Argument 2	Argument 3
xif	Conditional Formulas	Jump to label	-

For example, you can finish waiting while the sound is playing and start moving a different process. It is used when you want to switch the sound when you start to decelerate or react immediately during acceleration.

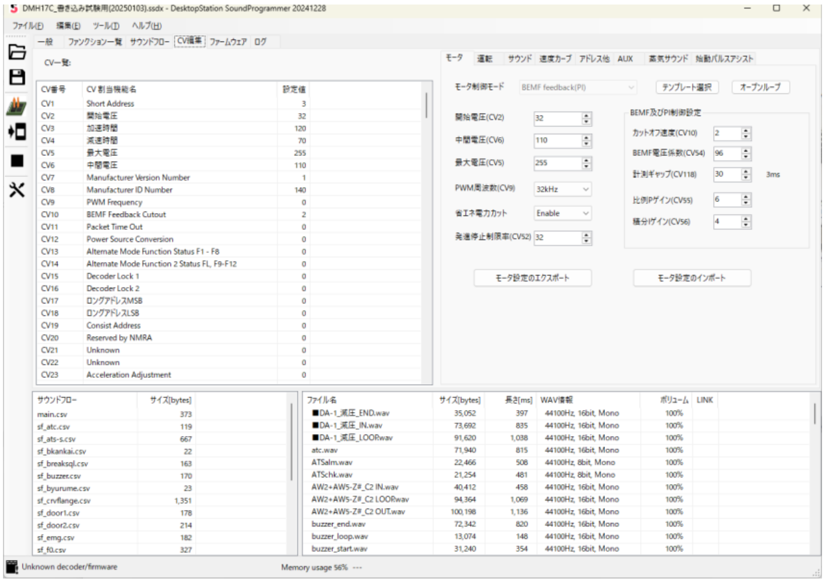
[Example of entry]

```
xif,f==0,END_LOOP
```

9.CV Settings

9.1.What is CV?

CV stands for Configuration Variable, which refers to the general term for how DCC decoders are configured. SmileSound provides a configuration function that complies with the CV standard, and implements a mechanism that can be easily performed on the DSSP.



CV一覧:

CV番号	CV 割当機能名	設定値
CV1	Short Address	3
CV2	開始電圧	32
CV3	加速時間	120
CV4	減速時間	70
CV5	最大電圧	255
CV6	中間電圧	110
CV7	Manufacturer Version Number	1
CV8	Manufacturer ID Number	140
CV9	PWM Frequency	0
CV10	BEMF Feedback Cutout	2
CV11	Packet Time Out	0
CV12	Power Source Conversion	0
CV13	Altemate Mode Function Status F1 - F8	0
CV14	Altemate Mode Function 2 Status FL, F9-F12	0
CV15	Decoder Lock 1	0
CV16	Decoder Lock 2	0
CV17	ロングアドレスMSB	0
CV18	ロングアドレスLSB	0
CV19	Consist Address	0
CV20	Reserved by NMRA	0
CV21	Unknown	0
CV22	Unknown	0
CV23	Acceleration Adjustment	0

モータ制御モード: BEMF feedback(PI)

開始電圧(CV2): 32
中間電圧(CV6): 110
最大電圧(CV5): 255
PWM周波数(CV9): 32kHz
省エネ電力カット: Enable
発進停止制限率(CV52): 32

BEMF及びPI制御設定
カットオフ速度(CV10): 2
BEMF電圧係数(CV54): 96
計測ギャップ(CV118): 30 3ms
比例Pゲイン(CV55): 6
積分Iゲイン(CV56): 4

サウンドフロー	サイズ[bytes]
main.csv	373
sf_atc.csv	119
sf_ats-s.csv	667
sf_bkankai.csv	22
sf_breaksql.csv	163
sf_buzzer.csv	170
sf_byurume.csv	23
sf_crvflange.csv	1,351
sf_door1.csv	178
sf_door2.csv	214
sf_emg.csv	182
sf_f0.csv	327

ファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム	LINK
■DA-1_減圧_END.wav	35,052	397	44100Hz, 16bit, Mono	100%	
■DA-1_減圧_IN.wav	73,692	835	44100Hz, 16bit, Mono	100%	
■DA-1_減圧_LOOP.wav	91,620	1,038	44100Hz, 16bit, Mono	100%	
atc.wav	71,940	815	44100Hz, 16bit, Mono	100%	
ATSalm.wav	22,466	508	44100Hz, 8bit, Mono	100%	
ATSchk.wav	21,254	481	44100Hz, 8bit, Mono	100%	
AW2+AW5-Z#_C2 IN.wav	40,412	458	44100Hz, 16bit, Mono	100%	
AW2+AW5-Z#_C2 LOOP.wav	94,364	1,069	44100Hz, 16bit, Mono	100%	
AW2+AW5-Z#_C2 OUT.wav	100,198	1,136	44100Hz, 16bit, Mono	100%	
buzzer_end.wav	72,342	820	44100Hz, 16bit, Mono	100%	
buzzer_loop.wav	13,074	148	44100Hz, 16bit, Mono	100%	
buzzer_start.wav	31,240	354	44100Hz, 16bit, Mono	100%	

Unknown decoder/firmware

Memory usage 56% ---

Figure 9.1.1 DSSP CV Editing Screen

9.2.How to initialize CV

To initialize or reset the CV, there are the following methods:

Table 9.2.1 List of CV initialization methods

How to initialize CV	explanation
Write 8 to CV1	You can initialize the CV while it is still installed in the vehicle. This can be done using a common DCC command station.
Rewriting Sound Data Using DSSP	Use a USB lighter to connect your PC to the SmileSound decoder. Along with the sound data, the CV data is also rewritten to the initial value.
Use DSSP to rewrite CV	Use a USB lighter to connect your PC to the SmileSound decoder. You can use DSSP's CV programming feature to rewrite only CVs.

9.3.Motor Tab

The motor tab allows you to adjust the movement of the motor.

In addition, you can add a motor configuration file (Figure 9.3.1You can easily set the scale gauge and the data tuned according to the type of vehicle manufacturer, motor or trolley. These are provided by volunteers from users. I would like to express my gratitude here.

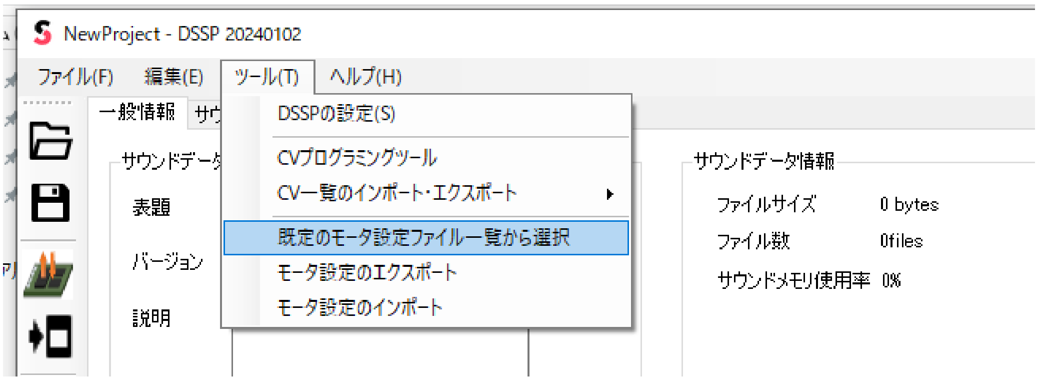
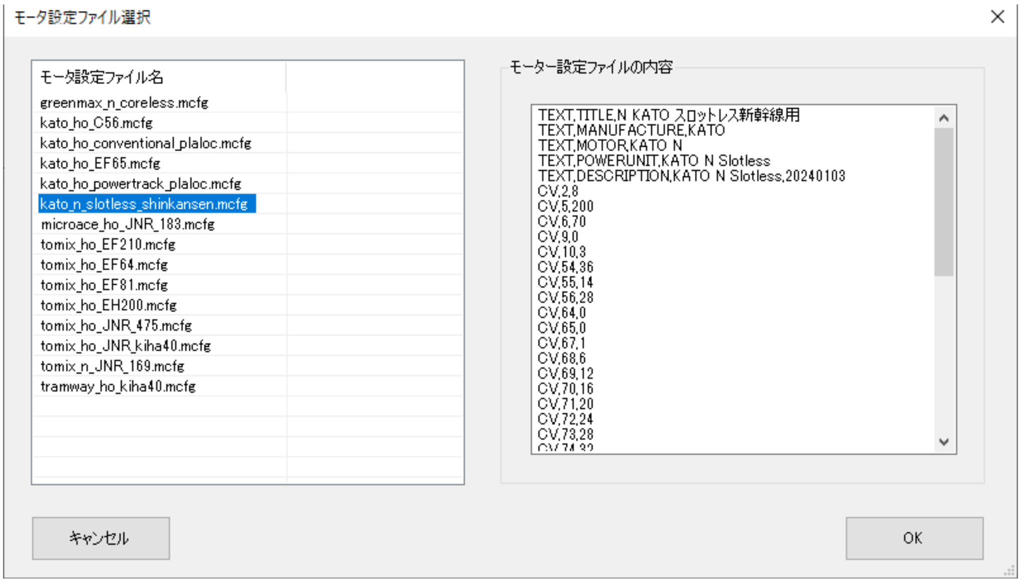


Figure 9.3.1 to list motor configuration files



greenmax_n_coreless.mcfg
kato_ho_C56.mcfg
kato_ho_conventional_plaloc.mcfg
kato_ho_EF65.mcfg
kato_ho_powertrack_plaloc.mcfg
kato_n_slotless_shinkansen.mcfg
microace_ho_JNR_183.mcfg
tomix_ho_EF210.mcfg
tomix_ho_EF64.mcfg
tomix_ho_EF81.mcfg
tomix_ho_EH200.mcfg
tomix_ho_JNR_475.mcfg
tomix_ho_JNR_kiha40.mcfg
tomix_n_JNR_169.mcfg
tramway_ho_kiha40.mcfg

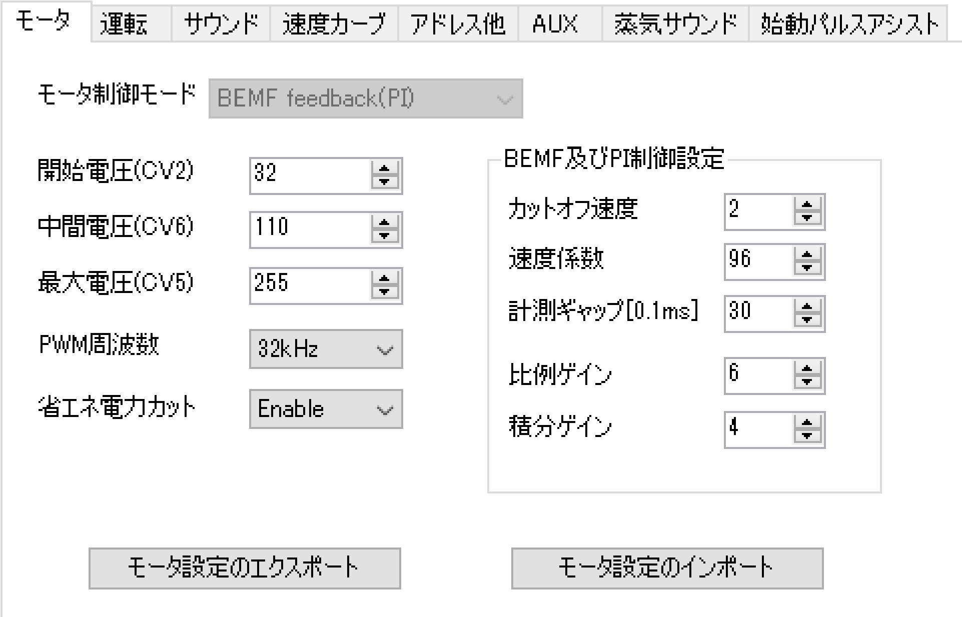
```
TEXT,TITLE,N KATO スロットレス新幹線用
TEXT,MANUFACTURE,KATO
TEXT,MOTOR,KATO N
TEXT,POWERUNIT,KATO N Slotless
TEXT,DESCRIPTION,KATO N Slotless,20240103
CV,2,8
CV,5,200
CV,6,70
CV,9,0
CV,10,3
CV,54,36
CV,55,14
CV,56,28
CV,64,0
CV,65,0
CV,67,1
CV,68,6
CV,69,12
CV,70,16
CV,71,20
CV,72,24
CV,73,28
CV,74,32
```

Figure 9.3.2 Motor Configuration File Selection Screen

Table 9.3.1 How to set up in the CV and motor tab

	How to adjust	remarks
Starting voltageCV2	It varies greatly depending on the motor, bogie, gear ratio, etc. It is often set in the range of 16-64.	
Intermediate voltageCV6	Use a value of about half of 255 or CV5/2 as a guideline. By setting a value of CV5/2 to CV5/3, it will be a more realistic ride.	
Maximum voltage CV5	This is a setting item that determines the maximum speed. 255 is the maximum. It is better to decide on about 200-255.	
PWM Frequency	If there is no particular problem, please leave it at 32kHz.	
BEMF & PI Control Settings		
Cut-off speed	If there is no problem with BEMF, no particular changes are required.	
Speed coefficient	Set it up as follows:	

	Old country, narrow and other slow running: 128 Commuter trains, limited expresses, etc.: 64-96 Shinkansen: 64	
Measurement Gap	This is a setting of the timing time to detect the BEMF, which can be adjusted from 0.3ms ~ 4.0ms (3-40d). By adjusting by the motor, the pulsation of the speed can be suppressed.	



モータ制御モード: BEMF feedback(PI)

開始電圧(CV2): 32

中間電圧(CV6): 110

最大電圧(CV5): 255

PWM周波数: 32kHz

省エネ電力カット: Enable

BEMF及びPI制御設定

カットオフ速度: 2

速度係数: 96

計測ギャップ[0.1ms]: 30

比例ゲイン: 6

積分ゲイン: 4

Figure 9.3.3 Motor CV Setting Screen

9.4.Starting Pulse Assist Function

Since a phenomenon called static friction occurs when an object starts moving, the pulse assist function is a function to reduce the effect of this static friction. Because of static friction, there will always be cases where the vehicle starts to run astringently. The pulse assist function is responsible for boosting the power exerted on the motor a little so that the effect of static friction is reduced. Depending on the weight of the motor and locomotive, it is necessary to set exquisite values that are neither too large nor too small.

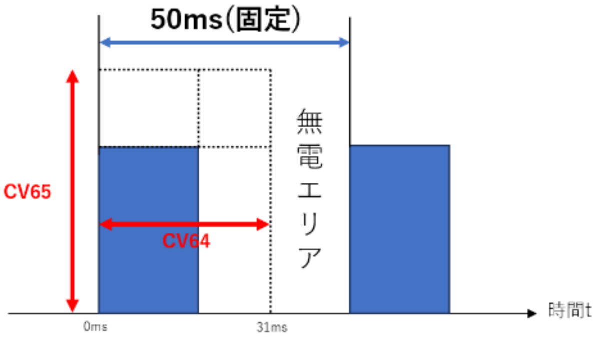
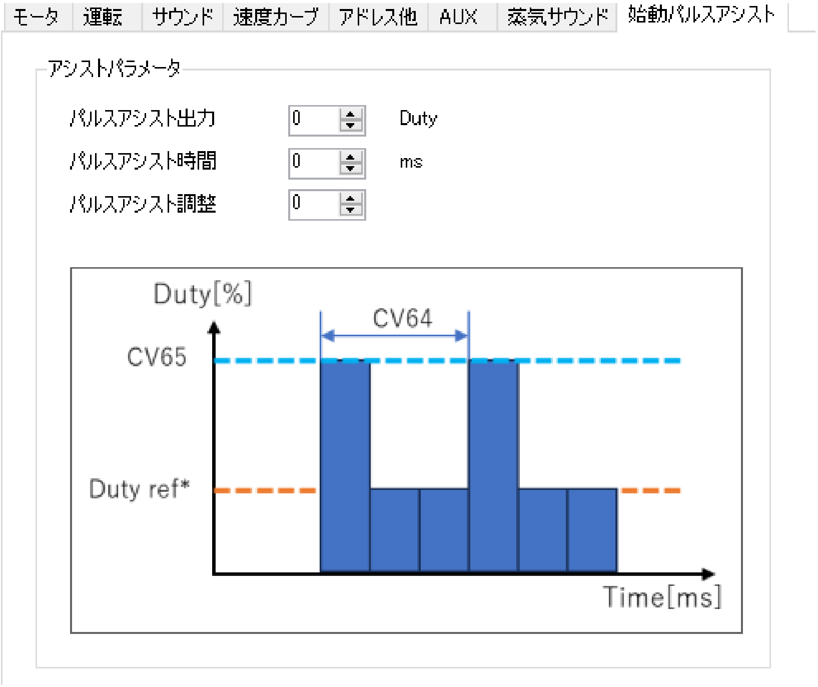


Figure 9.3.1 Pulse Assist Image



アシストパラメータ

パルスアシスト出力 0 Duty

パルスアシスト時間 0 ms

パルスアシスト調整 0

Figure 9.4.2 Pulse Assist Settings

[If you do not use the pulse assist function]

CV64=0, CV65=0. The pulse assist function does not work. In DSSP, if all assist parameters are set to 0, the pulse assist function will be disabled.

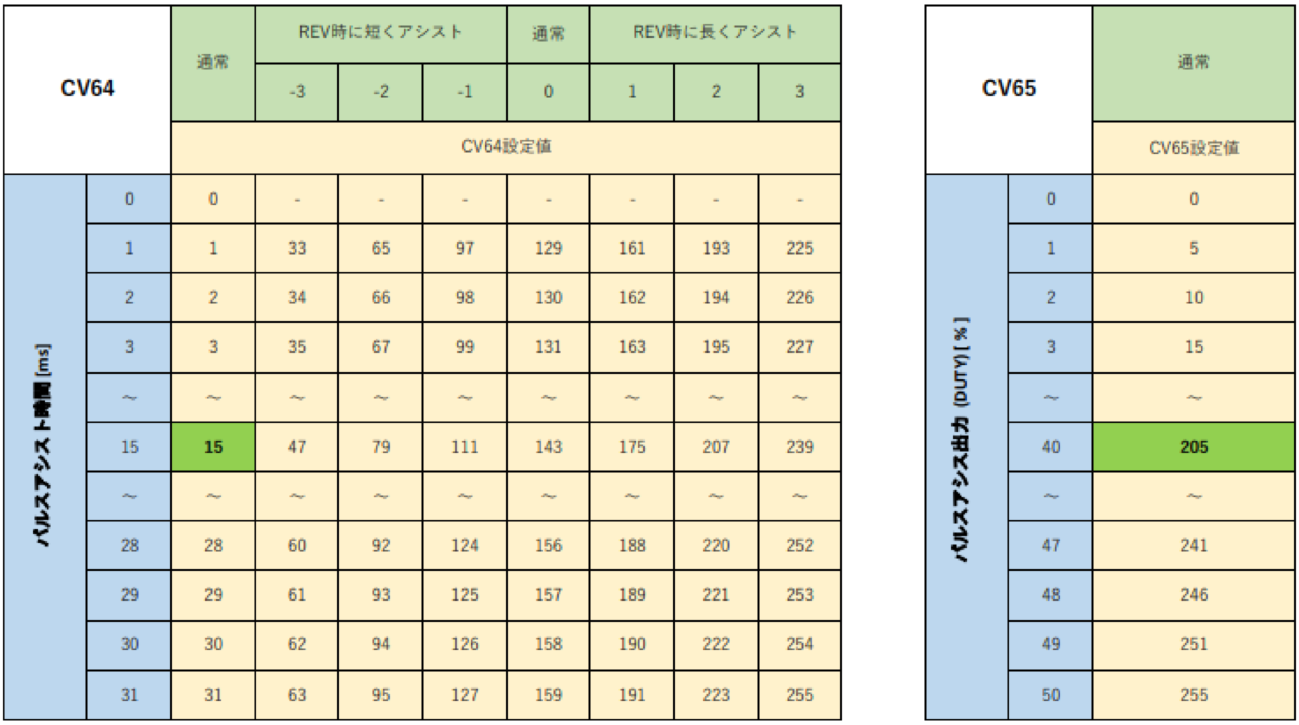
[When applying the pulse assist function]

First, set CV64=15 and CV65=205 as the default values. DSSP sets the pulse assist output (CV65) to 40%, the pulse assist time (CV64) to 15ms, and the pulse assist adjustment to 0. After that, I think it would be a good idea to try it while running in the direction of lowering (raising) the CV64.

The goal is to reach a speed of about 1/2~2/3 of the speed (minimum speed) just before stopping when decelerating without assistance in SpeedStep 1 (minimum running speed).

The diagram below is illustrated. The leftmost time (ms is milliseconds) is the time to move the pulse assist function. The Pulse Assist function only moves for a moment, but you can fine-tune that moment. The default is CV64=15, so the pulse assist time is 15ms and is set to "normal". Longer pulse assist time increases the time it pops out. Depending on the specifications of the motor, it may not start running unless it is longer, so if the CV65 described later is not enough, try increasing the time of the CV64 little by little.

The CV65 is based on a standard 205 for the degree of pulse assist force, so the Duty is 40%. Reducing the value of CV65 reduces the force to pulse assist. If the locomotive pops out, make the CV65 smaller to fit the jump, so find the right lower limit.

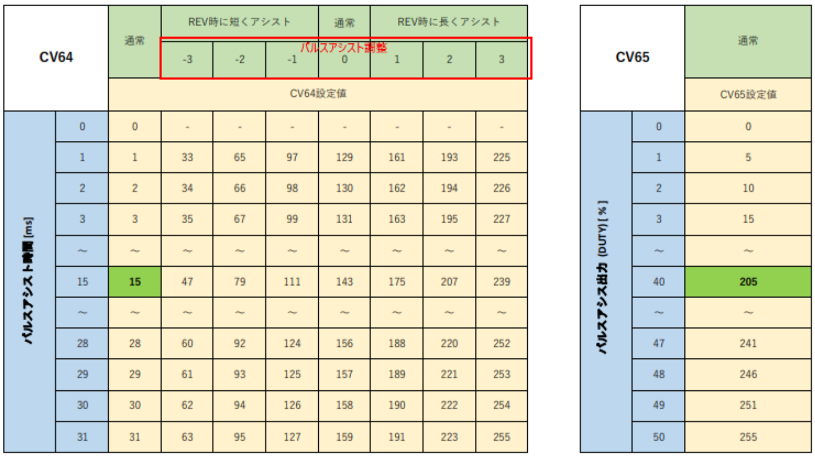


CV64		通常	REV時に短くアシスト			通常	REV時に長くアシスト		
			-3	-2	-1	0	1	2	3
		CV64設定値							
パルスアシスト時間 [ms]	0	0	-	-	-	-	-	-	-
	1	1	33	65	97	129	161	193	225
	2	2	34	66	98	130	162	194	226
	3	3	35	67	99	131	163	195	227
	～	～	～	～	～	～	～	～	～
	15	15	47	79	111	143	175	207	239
	～	～	～	～	～	～	～	～	～
	28	28	60	92	124	156	188	220	252
	29	29	61	93	125	157	189	221	253
	30	30	62	94	126	158	190	222	254
	31	31	63	95	127	159	191	223	255

CV65		通常
		CV65設定値
パルスアシス出力 (DUTY) [％]	0	0
	1	5
	2	10
	3	15
	～	～
	40	205
	～	～
	47	241
	48	246
	49	251
	50	255

Figure 9.4.3 Pulse Assist Adjustment Table

Pulse assist adjustment applies to the lateral -3~0~+3 adjustment items in the table on the left.



CV64		通常	REV時に短くアシスト			通常	REV時に長くアシスト		
			-3	-2	-1	0	1	2	3
		CV64設定値							
パルスアシスト時間 [ms]	0	0	-	-	-	-	-	-	-
	1	1	33	65	97	129	161	193	225
	2	2	34	66	98	130	162	194	226
	3	3	35	67	99	131	163	195	227
	～	～	～	～	～	～	～	～	～
	15	15	47	79	111	143	175	207	239
	～	～	～	～	～	～	～	～	～
	28	28	60	92	124	156	188	220	252
	29	29	61	93	125	157	189	221	253
	30	30	62	94	126	158	190	222	254
	31	31	63	95	127	159	191	223	255

CV65		通常
		CV65設定値
パルスアシス出力 (DUTY) [％]	0	0
	1	5
	2	10
	3	15
	～	～
	40	205
	～	～
	47	241
	48	246
	49	251
	50	255

Figure 9.4.4 Pulse Assist Adjustment Range

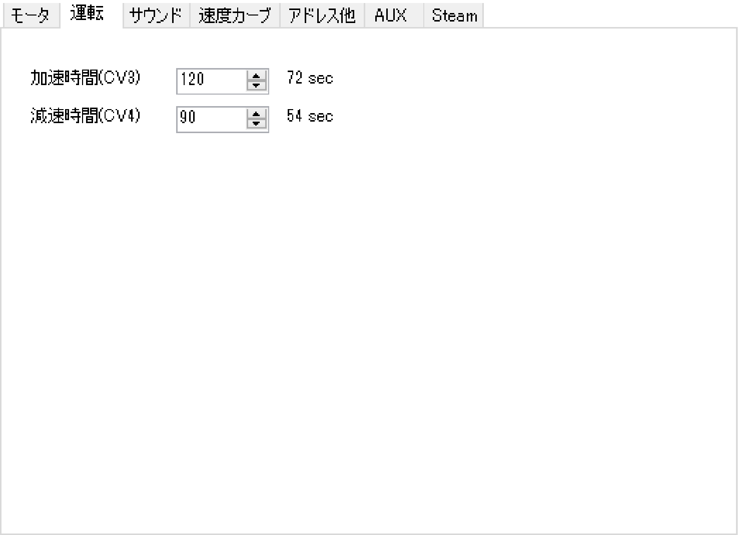
9.5.Driving Tab

This is a screen to edit the acceleration time and deceleration time related to CV3 and CV4. The values set for CV3 and CV4 can be converted to seconds [sec] when divided by 0.6. For example, if CV3 = 100, the acceleration time would be 100/0.6 = 166.67 seconds.

Some commands output sound based on the acceleration and deceleration time set here, so if you are developing new sound data, you will need to adjust it for each sound data. The sound data published on the Sound Data for SmileSound homepage has already been adjusted, so there is no need to change this screen.

Note that if you change the settings on this screen for the adjusted sound data, the sound during acceleration and deceleration may behave differently. If you use adjusted sound data, we strongly recommend that you do not make any changes to this screen.

For CV3 and CV4 of steam locomotive sound data and CV4 of electric locomotive and suspended train sound data, it is possible to fine-tune the sound data of electric locomotives and suspended trains to about 50% of the ±. Please consider that other sound data cannot be changed in principle.



加速時間(CV3) 120 72 sec

減速時間(CV4) 90 54 sec

Figure 9.5.1 Settings Screen

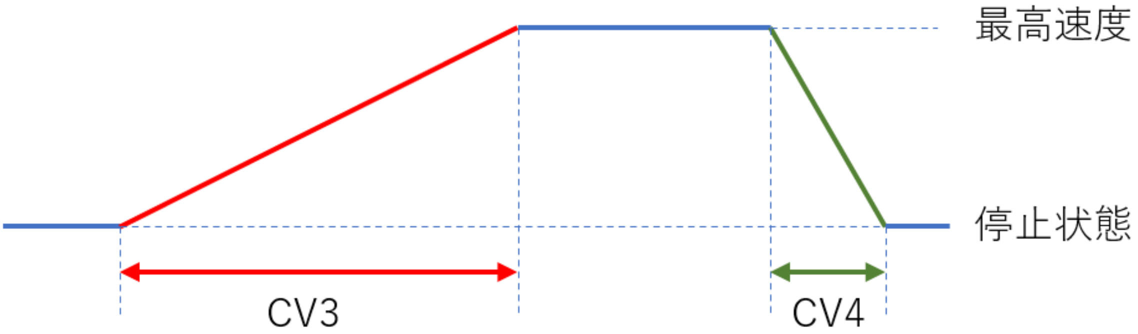


Figure 9.5.2 Definition of acceleration time (CV3) and deceleration time (CV4)

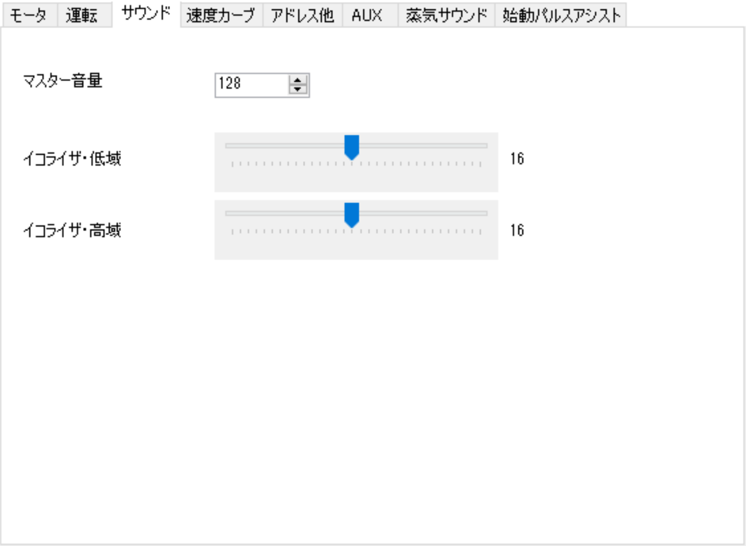
9.6.Sound tab

This is the screen where you can set the CV63 master volume and CV196 and CV197 equalizer functions.

The master volume ranges from 0-255 and the volume can be set.

The equalizer has 16 disabled (no effect), and a value greater than 16 will emphasize low (800 Hz or less) or high (4 kHz or more) sounds. Conversely, if you put a value less than 16, it will weaken the low or high frequency sound. OPS/Program on Main (PoM) allows you to change the CV value during operation.

The equalizer is greatly influenced by the characteristics of the speaker itself, the enclosure, the method and location of the speaker, and the surrounding structure. Especially with smaller speakers or thin, smaller enclosures, you may not get the bass boost you expect. If you are using a small speaker or enclosure, it may be better to adjust the low frequencies to increase the high frequencies. Please consider it theoretically and adjust the value.



マスター音量 128

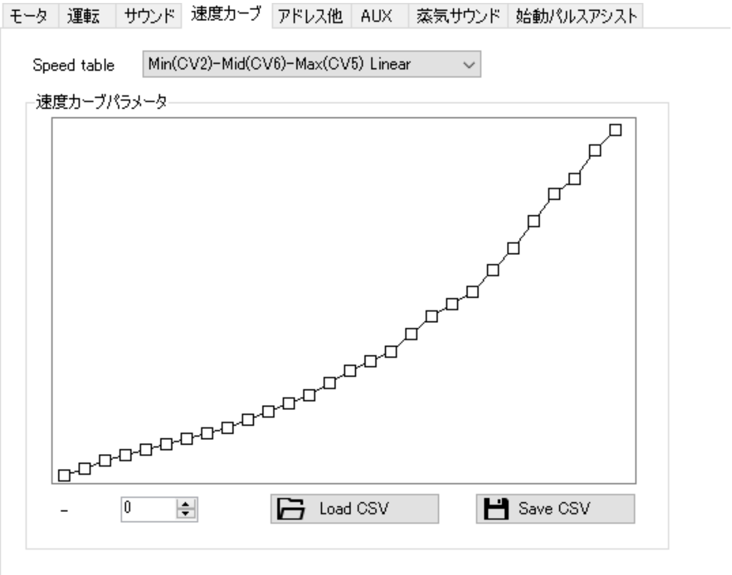
イコライザ・低域 16

イコライザ・高域 16

Figure 9.6.1 Settings Screen

9.7.Speed Curve Tab

DCC decoders are equipped with a function called a speed table that adjusts the upward curve of acceleration. As standard, the speed curve by linear complementation using CV2, CV5, and CV6 is used, but by using the 28-step speed curve provided in the CV67-94, a smoother upward curve can be set. Switching between speed tables can be easily done on the DSSP speed curve settings screen.
Speed curves can be saved and imported as simple CSV files, so they can be created and freely replaced according to the format of the locomotive, motor, and characteristics of the bogie. You can easily adjust the speed curve parameters by clicking on the graph with the mouse operation.



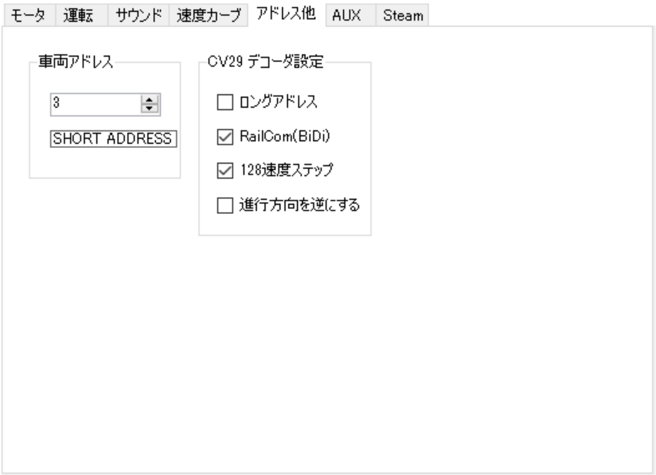
Speed table: Min(CV2)-Mid(CV6)-Max(CV5) Linear

0

Figure 9.7.1 Speed Curve Setting Screen

9.8.Address and other tabs

This is the screen to set the address of the decoder. Normally, it is recommended to keep it as a short address of 3. This is because if you set an address other than 3 in the sound data, it may be confused with a malfunction when checking the operation. DSSP will do the sound data, and change the address at your command station.



車両アドレス: 3

SHORT ADDRESS

CV29 デコーダ設定

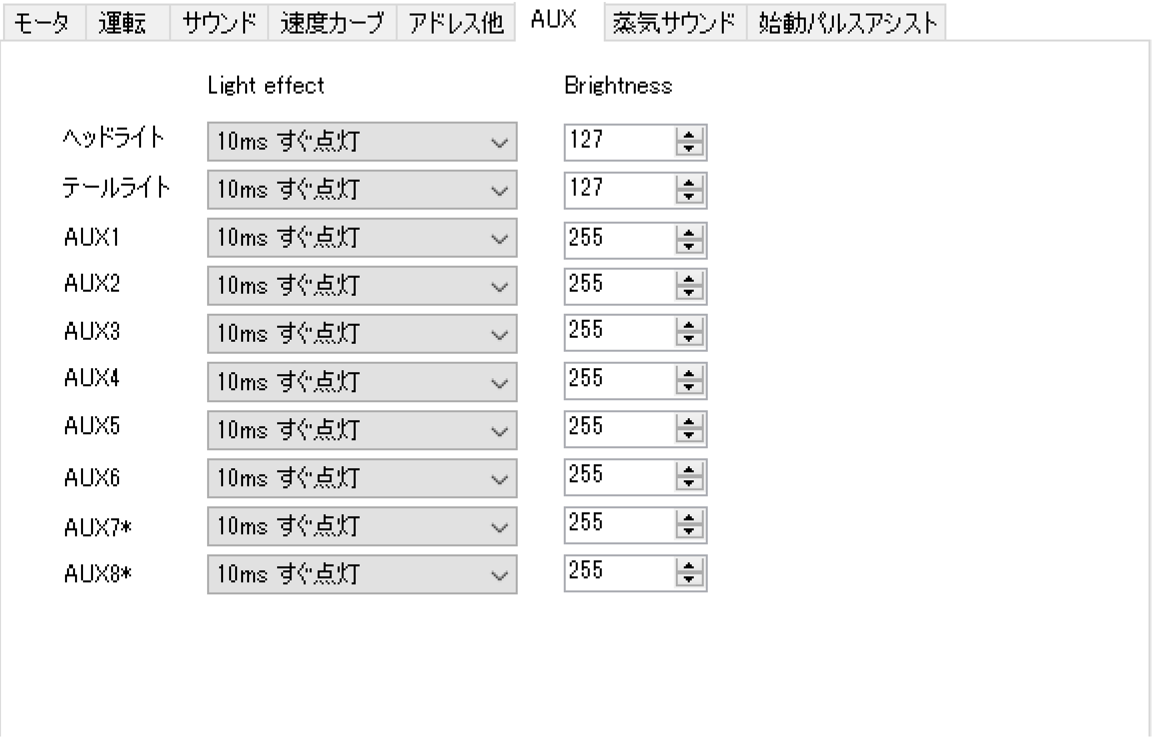
□ ロングアドレス
☑ RailCom(BiDi)
☑ 128速度ステップ
□ 進行方向を逆にする

Figure 9.8.1 Address and other settings screen

9.9.AUX Tab

This screen can be controlled by outputting from the decoder's AUX terminal to set the effects of lights using LEDs such as interior lights, headlights, and taillights.

The AUX is the PWM output, and you can set the maximum PWM duty in Brightness. The maximum value is 255, and if the lights are turned off, they specify 0. It is linked to CV175-CV184, and due to firmware constraints, the number is automatically calculated and set to the CV value by inverting (0⇔255).



	Light effect	Brightness
ヘッドライト	10ms すぐ点灯	127
テールライト	10ms すぐ点灯	127
AUX1	10ms すぐ点灯	255
AUX2	10ms すぐ点灯	255
AUX3	10ms すぐ点灯	255
AUX4	10ms すぐ点灯	255
AUX5	10ms すぐ点灯	255
AUX6	10ms すぐ点灯	255
AUX7*	10ms すぐ点灯	255
AUX8*	10ms すぐ点灯	255

Figure 9.9.1 AUX Settings Screen

9.10. Steam Tab

This screen is used with steam commands (e.g., stm).

At low speeds, the interval between sound is lengthened, and at high speed, the interval between sound is shortened to reproduce the above sound of sposhpo. However, if the interval is shortened in a straight line, the sound changes rapidly at low speeds. Therefore, we have interpolated the following orange lines to smoothly shorten the interval between sounds. This adjustment is also subject to this test.

Table 9.10.1 Steam Sound Settings

Set value	Explanation of settings
Low spd interval (CV57)	This is a CV that adjusts the time interval [10ms] of steam sound at the beginning of running. A number of 10 times the set value is added. If you put 1, 10ms will be added.
High spd interval (CV58)	CV to adjust the time interval [ms] at maximum speed. A number that is 1 times the set value is added. If you put 1, you

	will add 1ms.

The four sounds are played in turn, but the two channels are combined and played alternately. Because of the specificity of this movement, we implement a dedicated function in the firmware. The time interval for moving to 0→1 or 1→2 is controlled by the above speed ~ vapor sound reproduction interval [ms (milliseconds)]. The file name is specified in the STM command, which will be described later, so it is a good idea to name it arbitrarily for clarity. In addition, the sound can be changed while driving on the Sound Flow, so you can switch between the sound of shposhpo at low speed and the sound of shposhpo at high speed with the stm command.

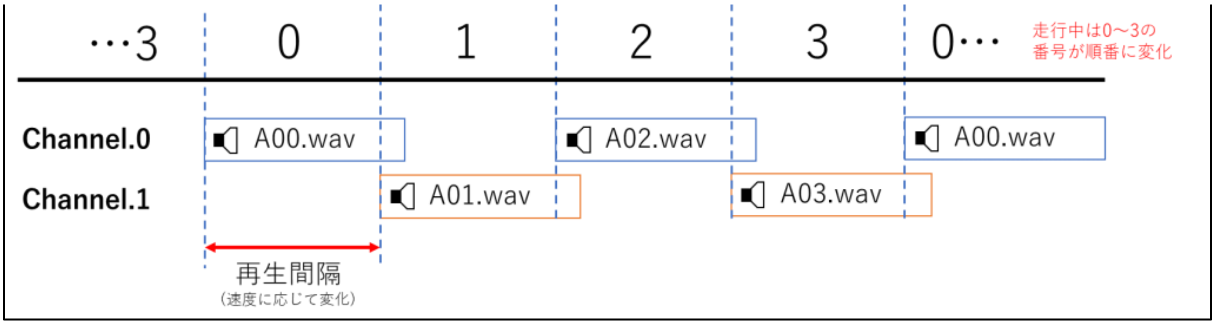
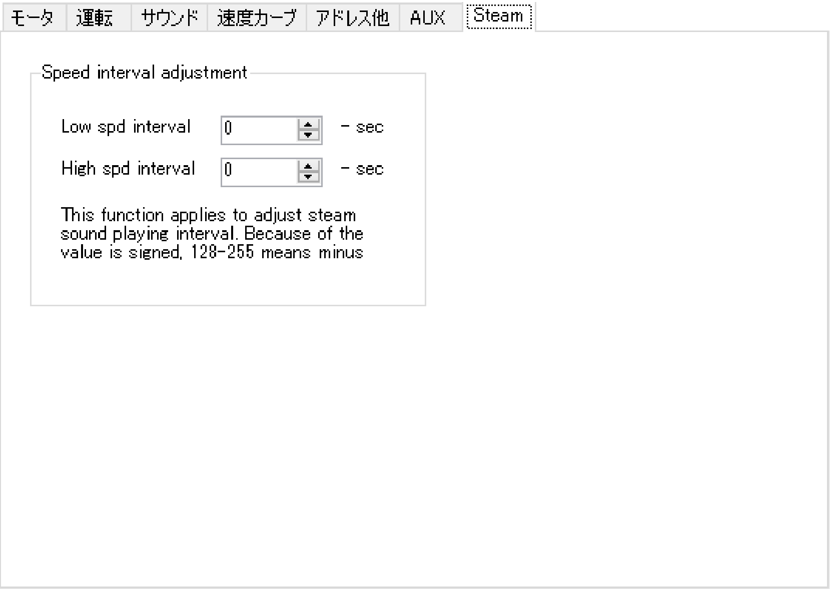


Figure 9.10.1Timing Control of Steam Sound Playback Using STM Command.



Speed interval adjustment

Low spd interval 0 - sec

High spd interval 0 - sec

This function applies to adjust steam sound playing interval. Because of the value is signed, 128-255 means minus

Figure 9.10.2 CV Settings Screen for Steam Sound

9.11. User CV

The CV is assigned to CV155-CV170 with unique sound data and available CVs. For example, if you want to create a new feature and want to be able to change it in your CV, you can use this area. Please define and use each sound data freely. On the Sound Flow, it can be used as variables CV155, CV156, and CV170. The meaning of CV values varies greatly depending on how the sound flow is implemented, so it is highly recommended to create a sound data manual for this purpose.

10.tutorial

Here, based on the functions and usage described so far, we will explain how to operate them for each theme. This assumes that you will use the Sample sound data published on the SmileSound website.

Sample Sound Data for SmileSound Public Site URL
https://desktopstation.net/smilesound/index.php?SoundData

10.1. How to change your address

SmileSound is designed to comply with the NMRA DCC standard and can be readdressed in the same way as other DCC decoders.

Locomotive addresses include short addresses (2-digit addresses) and long addresses (4-digit addresses).

SmileSound allows you to register the initial address setting in the sound data, and all the sound data provided by SmileSound is set to a short address of 3 (CV1=3, bit5 of CV29 is 0).

If you are not sure, you can write a number on CV1 and think that the address will change for the time being. If you write a number on CV1 and it doesn't change, think of it as switching to a long address mode.

Especially for long addresses, we highly recommend using our DSairLite because the configuration is very difficult to configure. You can easily set and check long and short addresses without being aware of them.

Table 10.1.1 Types of address modes, CVs, and switching methods

	CV used	How to switch between address mode
Short address	CV1	CV29 bit5 is set to 0 to enter short address mode
Long address	CV17,CV18	CV29 bit5 is set to 1 to long address mode.

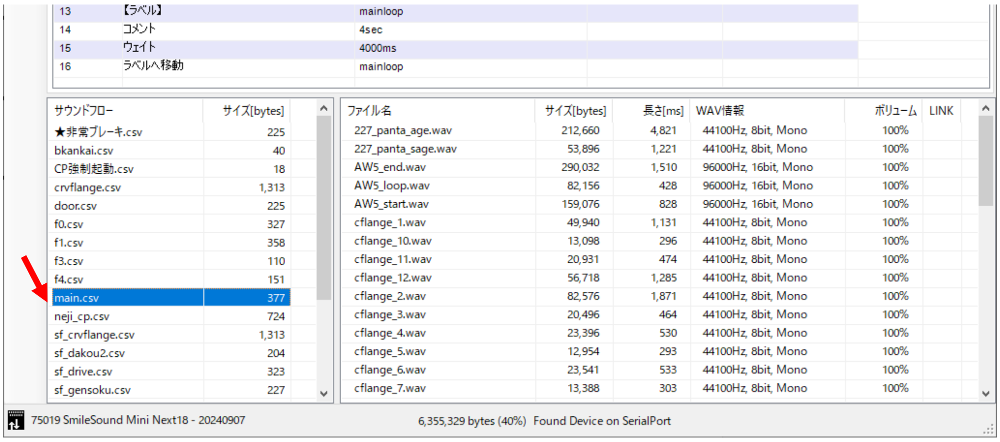
The address is calculated in the following ways:

Table 10.1.2 Types of address modes, CVs, and switching methods

	CV to write	Calculation method
Short address	CV1	You just need to put the value from 1-100 (127) as it is.
Long address	CV17	If the address you want to change is x(101-9999), CV17=(x/256)+192
	CV18	When the address you want to change is x (101-9999) CV18=x/256 (surplus, x%256)

10.2. Change a function

As a rule, the functions of sound data are defined in main.csv. The Sample sound data also adheres to this principle. First, open the main.csv. Select main.csv from the list of soundflows to display the soundflow.



13	【ラベル】	mainloop
14	コメント	4sec
15	ウェイト	4000ms
16	ラベルへ移動	mainloop

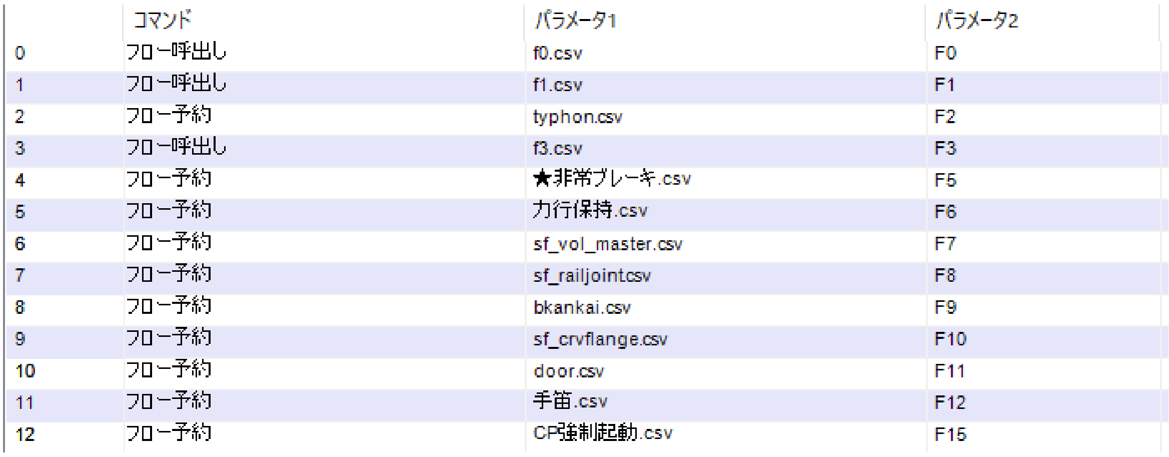
サウンドフロー	サイズ[bytes]
★非常ブレーキ.csv	225
bkankai.csv	40
CP強制起動.csv	18
crvflange.csv	1,313
door.csv	225
f0.csv	327
f1.csv	358
f3.csv	110
f4.csv	151
main.csv	377
neji_cp.csv	724
sf_crvflange.csv	1,313
sf_dakou2.csv	204
sf_drive.csv	323
sf_gensoku.csv	227

ファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム	LINK
227_panta_age.wav	212,660	4,821	44100Hz, 8bit, Mono	100%	
227_panta_sage.wav	53,896	1,221	44100Hz, 8bit, Mono	100%	
AW5_end.wav	290,032	1,510	96000Hz, 16bit, Mono	100%	
AW5_loop.wav	82,156	428	96000Hz, 16bit, Mono	100%	
AW5_start.wav	159,076	828	96000Hz, 16bit, Mono	100%	
cflange_1.wav	49,940	1,131	44100Hz, 8bit, Mono	100%	
cflange_10.wav	13,098	296	44100Hz, 8bit, Mono	100%	
cflange_11.wav	20,931	474	44100Hz, 8bit, Mono	100%	
cflange_12.wav	56,718	1,285	44100Hz, 8bit, Mono	100%	
cflange_2.wav	82,576	1,871	44100Hz, 8bit, Mono	100%	
cflange_3.wav	20,496	464	44100Hz, 8bit, Mono	100%	
cflange_4.wav	23,396	530	44100Hz, 8bit, Mono	100%	
cflange_5.wav	12,954	293	44100Hz, 8bit, Mono	100%	
cflange_6.wav	23,541	533	44100Hz, 8bit, Mono	100%	
cflange_7.wav	13,388	303	44100Hz, 8bit, Mono	100%	

75019 SmileSound Mini Next18 - 20240907   6,355,329 bytes (40%) Found Device on SerialPort

Figure 10.2.1 Example of opening a main.csv

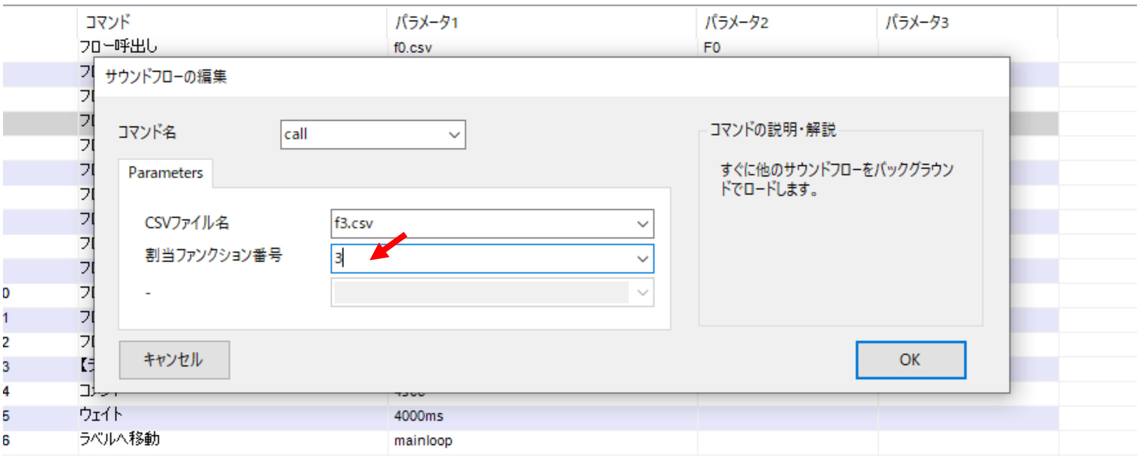
A list of soundflows is displayed. Here, you can see that you are using commands such as call or date to open other soundflows. The parameter 2 column contains the function number. This is the process of mapping the function number to the soundflow.



	コマンド	パラメータ1	パラメータ2
0	フロー呼出し	f0.csv	F0
1	フロー呼出し	f1.csv	F1
2	フロー予約	typhon.csv	F2
3	フロー呼出し	f3.csv	F3
4	フロー予約	★非常ブレーキ.csv	F5
5	フロー予約	力行保持.csv	F6
6	フロー予約	sf_vol_master.csv	F7
7	フロー予約	sf_railjointcsv	F8
8	フロー予約	bkankai.csv	F9
9	フロー予約	sf_crvflange.csv	F10
10	フロー予約	door.csv	F11
11	フロー予約	手笛.csv	F12
12	フロー予約	CP強制起動.csv	F15

Figure 10.2.2 main.csv Sound Flow

If you want to change this correspondence, double-click the row that corresponds to the function number you want to change and change the assigned function number to the number of the function number you want to change. Be sure to enter the number in the range of 0-31 in half-width numbers. Press OK to reflect it.



	コマンド	パラメータ1	パラメータ2	パラメータ3
	フロー呼出し	f0.csv	F0	
5	ウェイト	4000ms		
6	ラベルへ移動	mainloop		

サウンドフローの編集

コマンド名: call

Parameters

CSVファイル名: f3.csv

割当ファンクション番号: 3

コマンドの説明・解説

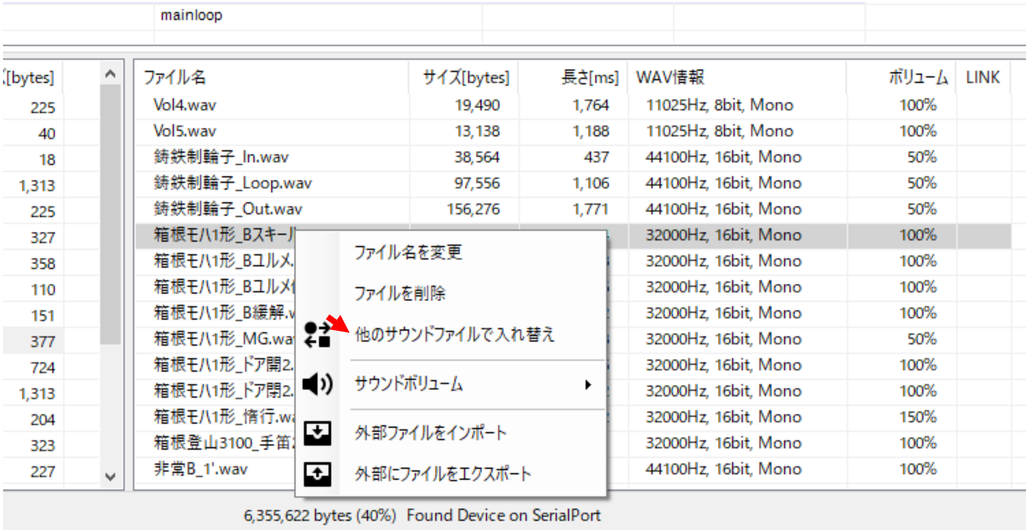
すぐに他のサウンドフローをバックグラウンドでロードします。

Figure 10.2.3 Changing the Function Number

This concludes the explanation of changing the function number of the Sample sound data.

10.3. Replace the sound

To replace the sound, select the WAV file in the list of sound source files, and select "Replace with another sound file" from the pop-up menu that appears when you right-click to replace the WAV file (sound).



mainloop

[bytes]	ファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム	LINK
225	Vol4.wav	19,490	1,764	11025Hz, 8bit, Mono	100%	
40	Vol5.wav	13,138	1,188	11025Hz, 8bit, Mono	100%	
18	鋳鉄制輪子_In.wav	38,564	437	44100Hz, 16bit, Mono	50%	
1,313	鋳鉄制輪子_Loop.wav	97,556	1,106	44100Hz, 16bit, Mono	50%	
225	鋳鉄制輪子_Out.wav	156,276	1,771	44100Hz, 16bit, Mono	50%	
327	箱根モハ1形_Bスキー			32000Hz, 16bit, Mono	100%	
358	箱根モハ1形_Bユルメ			32000Hz, 16bit, Mono	100%	
110	箱根モハ1形_Bユルメ			32000Hz, 16bit, Mono	100%	
151	箱根モハ1形_B緩解.w			32000Hz, 16bit, Mono	100%	
377	箱根モハ1形_MG.wa			32000Hz, 16bit, Mono	50%	
724	箱根モハ1形_ドア開2.			32000Hz, 16bit, Mono	100%	
1,313	箱根モハ1形_ドア閉2.			32000Hz, 16bit, Mono	100%	
204	箱根モハ1形_惰行.wa			32000Hz, 16bit, Mono	150%	
323	箱根登山3100_手笛			32000Hz, 16bit, Mono	100%	
227	非常B_1'.wav			44100Hz, 16bit, Mono	100%	

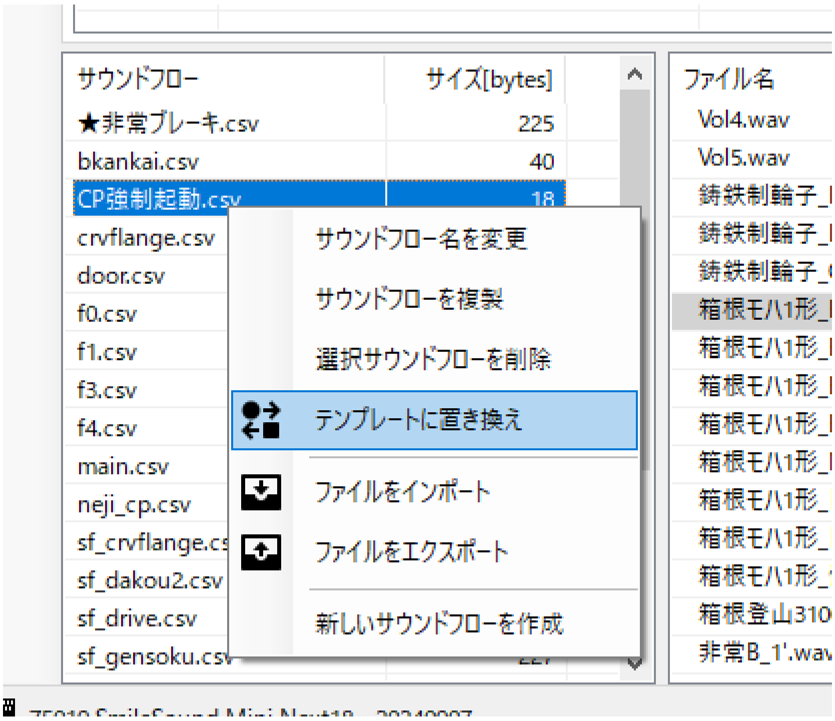
6,355,622 bytes (40%) Found Device on SerialPort

Figure 10.3.1 How to replace the sound

10.4. Replace Sound Flow

There is also the ability to replace the soundflow itself with the template provided by DSSP as standard. Although many templates are not provided in the initial state, optional packages are available free of charge on SmileSound's DSSP download page. Please take advantage of it.

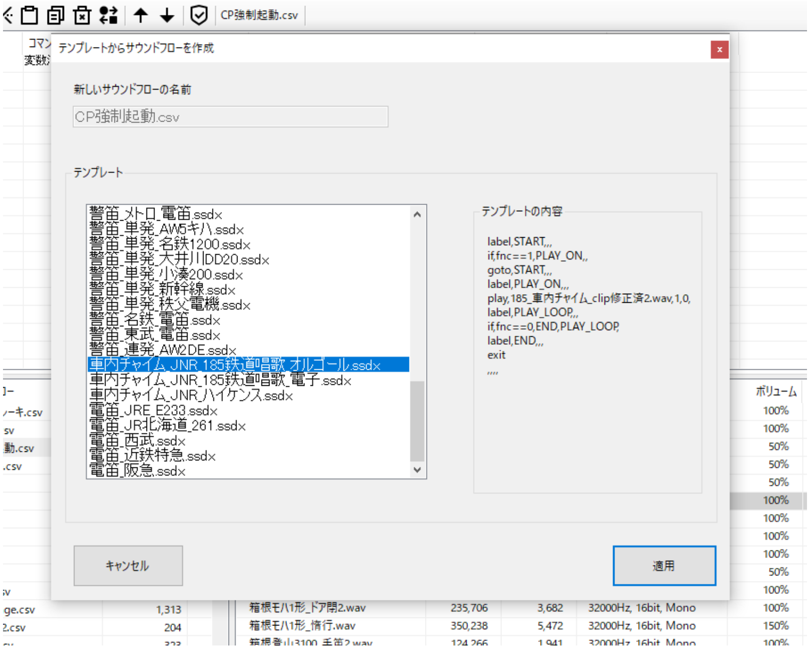
Please note that the WAV file used in the Soundflow before the replacement will not be automatically deleted. Make sure that it is not being used by other soundflows before removing it.



サウンドフロー	サイズ[bytes]
★非常ブレーキ.csv	225
bkankai.csv	40
CP強制起動.csv	18
crvflange.csv	
door.csv	
f0.csv	
f1.csv	
f3.csv	
f4.csv	
main.csv	
neji_cp.csv	
sf_crvflange.cs	
sf_dakou2.csv	
sf_drive.csv	
sf_gensoku.csv	

ファイル名
Vol4.wav
Vol5.wav
鋳鉄制輪子_
鋳鉄制輪子_
鋳鉄制輪子_
箱根モハ1形_
箱根モハ1形_
箱根モハ1形_
箱根モハ1形_
箱根モハ1形_
箱根モハ1形_
箱根モハ1形_
箱根モハ1形_
箱根登山310
非常B_1'.wav

Figure 10.4.1 Soundflow Replacement Function



新しいサウンドフローの名前: CP強制起動.csv

テンプレート

警笛_メトロ_電笛.ssdx
警笛_単発_AW5キハ.ssdx
警笛_単発_名鉄1200.ssdx
警笛_単発_大井川DD20.ssdx
警笛_単発_小湊200.ssdx
警笛_単発_新幹線.ssdx
警笛_単発_秩父電機.ssdx
警笛_名鉄_電笛.ssdx
警笛_東武_電笛.ssdx
警笛_連発_AW2DE.ssdx
車内チャイム_JNR_185鉄道唱歌_オルゴール.ssdx
車内チャイム_JNR_185鉄道唱歌_電子.ssdx
車内チャイム_JNR_ハイケンス.ssdx
電笛_JRE_E233.ssdx
電笛_JR北海道_261.ssdx
電笛_西武.ssdx
電笛_近鉄特急.ssdx
電笛_阪急.ssdx

テンプレートの内容

```
label,START,,,
if,fnc==1,PLAY_ON,,
goto,START,,,
label,PLAY_ON,,,
play,185_車内チャイム_clip修正済2.wav,1,0,
label,PLAY_LOOP,,,
if,fnc==0,END,PLAY_LOOP,
label,END,,,
exit
,,,,
```

Figure 10.4.2 Template List

10.5. How to adjust the motor

The following site describes how to adjust.

SmileSound Motor Functions
https://desktopstation.net/smilesound/index.php?cv_motor

10.6. Speed-linked volume adjustment

In the sound flow of the sound data for SmileSound (continuing to run at a constant speed), when it reaches a certain speed, it makes a coasting sound, but I was dissatisfied because the sound suddenly appeared at the timing of the playback start. There is a need to start playing more smoothly.

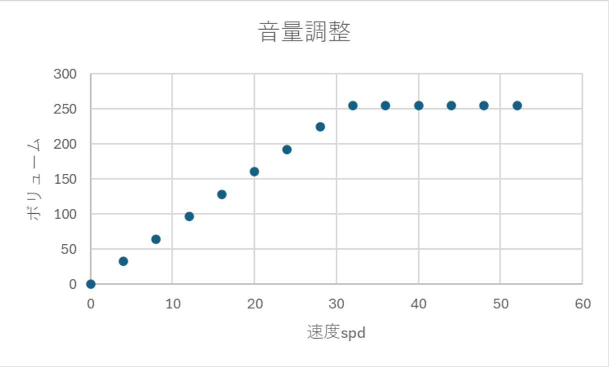
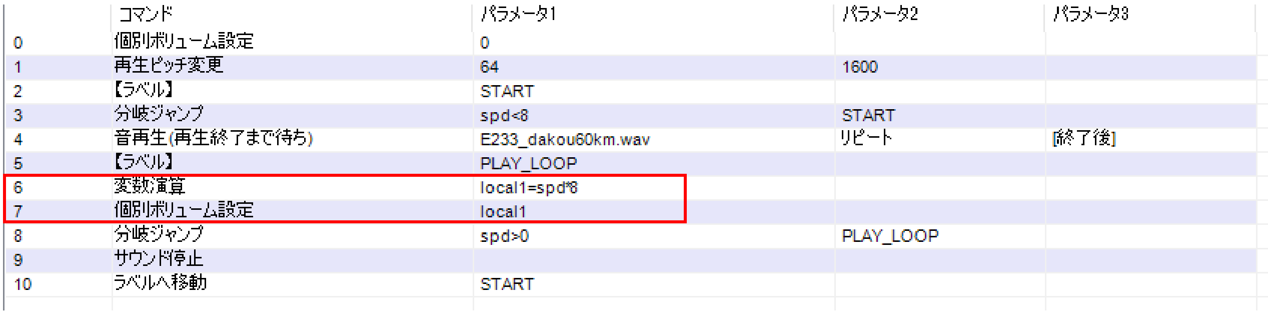


Figure 10.6.1 Example of the relationship between speed and volume

Therefore, we will show you how to allow variables to be set to the arguments of the individual volume setting command (vol) so that the volume changes smoothly in conjunction with the speed of the SPD. Between 0-32, try to raise it functionally in the first order. As an expression, I took measures by setting vol=spd*8 and putting internal processing to limit the individual volume setting command to 255.

When implemented in Soundflow, it looks like this:



	コマンド	パラメータ1	パラメータ2	パラメータ3
0	個別ボリューム設定	0		
1	再生ピッチ変更	64	1600	
2	【ラベル】	START		
3	分岐ジャンプ	spd<8	START	
4	音再生(再生終了まで待ち)	E233_dakou60km.wav	リピート	[終了後]
5	【ラベル】	PLAY_LOOP		
6	変数演算	local1=spd*8		
7	個別ボリューム設定	local1		
8	分岐ジャンプ	spd>0	PLAY_LOOP	
9	サウンド停止			
10	ラベルへ移動	START		

The coasting sound no longer suddenly sounded, and it sounded smoother.

10.7. Adjusting the brightness of LEDs connected to AUX

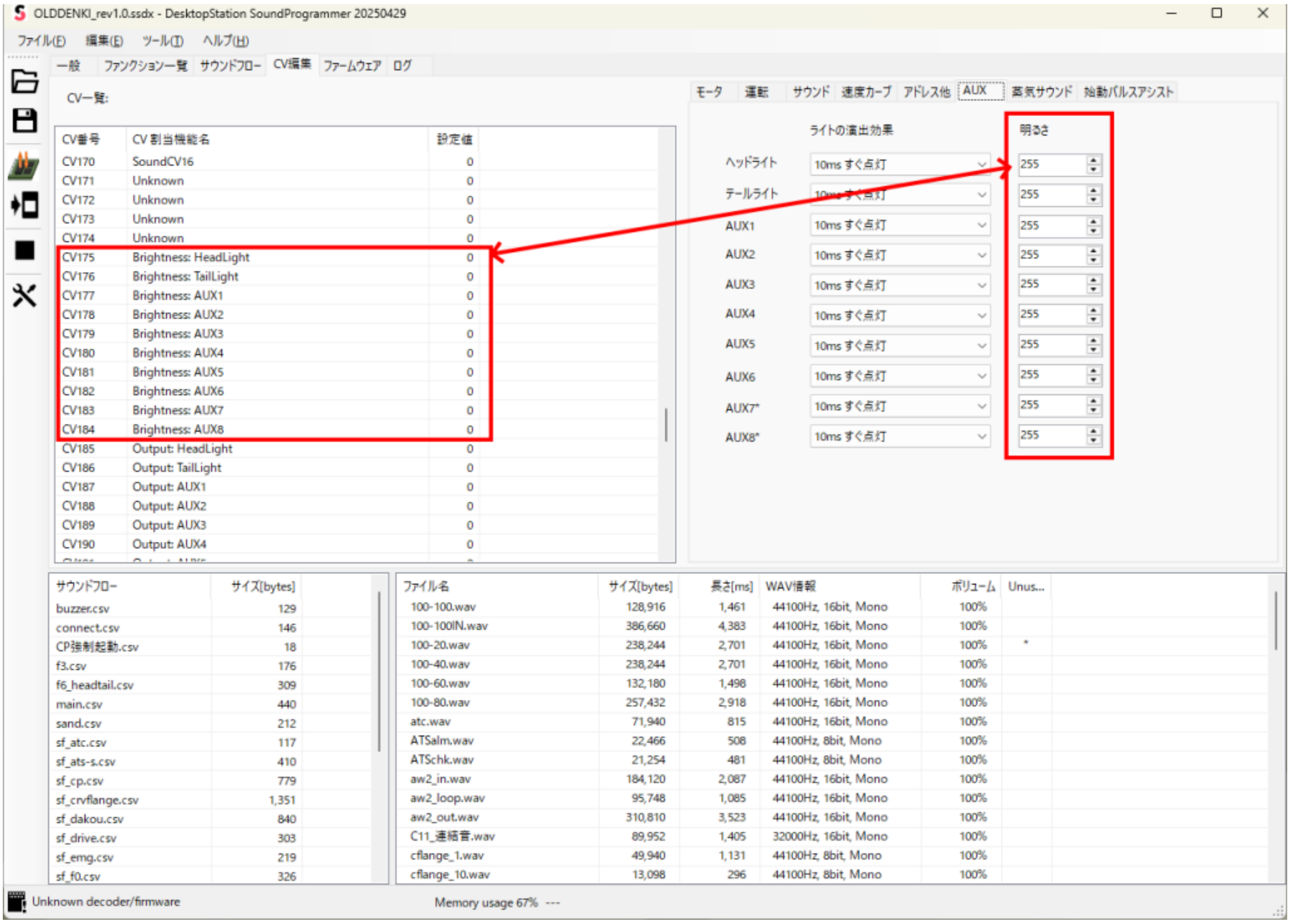
In the LEDs used in model train cars, adjusting the brightness affects the appearance. It's quite rough, but roughly speaking, I think you can get the desired brightness by applying the current to the LED as follows. This is only a guideline, and in the end, please design and calculate it by yourself. We do not guarantee this figure in any way.

Table 10.7.1 LED current estimate

Where to use LEDs	Magnitude of current (approximate)
Headlights, taillights, side lights, etc.	5mA or less (depending on LED specifications)
Interior Lights	Number of about 10mA (depending on the specification and number of LEDs, etc.)

The resistor that comes with our ExpBoard series mainly uses 560Ω (in principle in the 2012 size), but there may be cases where it is a little too bright for headlights and taillights. Therefore, removing the resistor and reattaching it to 1 kΩ, 1.2 kΩ, etc. is the first hardware method to adjust the brightness.

If you really don't want to replace the resistor, you can use the SmileSound adjustment function to adjust it. The AUX output of SmileSound is PWM adjustable on all pins. CV175~CV184 is assigned to headlights and taillights ~AUX8. The brightness in the AUX tab can be set from 0~255, with 255 being the Max voltage. These values are ultimately reflected in the CV. If you are directly operating the CV at a command station, please note that the value set in the CV will be brightened by the value minus 255. 50% voltage at 128 and no output at 0 (CV is 255).



CV番号	CV 割当機能名	設定値
CV170	SoundCV16	0
CV171	Unknown	0
CV172	Unknown	0
CV173	Unknown	0
CV174	Unknown	0
CV175	Brightness: HeadLight	0
CV176	Brightness: TailLight	0
CV177	Brightness: AUX1	0
CV178	Brightness: AUX2	0
CV179	Brightness: AUX3	0
CV180	Brightness: AUX4	0
CV181	Brightness: AUX5	0
CV182	Brightness: AUX6	0
CV183	Brightness: AUX7	0
CV184	Brightness: AUX8	0
CV185	Output: HeadLight	0
CV186	Output: TailLight	0
CV187	Output: AUX1	0
CV188	Output: AUX2	0
CV189	Output: AUX3	0
CV190	Output: AUX4	0

	ライトの演出効果	明るさ
ヘッドライト	10ms すぐ点灯	255
テールライト	10ms すぐ点灯	255
AUX1	10ms すぐ点灯	255
AUX2	10ms すぐ点灯	255
AUX3	10ms すぐ点灯	255
AUX4	10ms すぐ点灯	255
AUX5	10ms すぐ点灯	255
AUX6	10ms すぐ点灯	255
AUX7*	10ms すぐ点灯	255
AUX8*	10ms すぐ点灯	255

サウンドフロー	サイズ[bytes]
buzzer.csv	129
connect.csv	146
CP強制起動.csv	18
f3.csv	176
f6_headtail.csv	309
main.csv	440
sand.csv	212
sf_atc.csv	117
sf_ats-s.csv	410
sf_cp.csv	779
sf_crvflange.csv	1,351
sf_dakou.csv	840
sf_drive.csv	303
sf_emg.csv	219
sf_f0.csv	326

ファイル名	サイズ[bytes]	長さ[ms]	WAV情報	ボリューム	Unus...
100-100.wav	128,916	1,461	44100Hz, 16bit, Mono	100%	
100-100IN.wav	386,660	4,383	44100Hz, 16bit, Mono	100%	
100-20.wav	238,244	2,701	44100Hz, 16bit, Mono	100%	*
100-40.wav	238,244	2,701	44100Hz, 16bit, Mono	100%	
100-60.wav	132,180	1,498	44100Hz, 16bit, Mono	100%	
100-80.wav	257,432	2,918	44100Hz, 16bit, Mono	100%	
atc.wav	71,940	815	44100Hz, 16bit, Mono	100%	
ATSalm.wav	22,466	508	44100Hz, 8bit, Mono	100%	
ATSchk.wav	21,254	481	44100Hz, 8bit, Mono	100%	
aw2_in.wav	184,120	2,087	44100Hz, 16bit, Mono	100%	
aw2_loop.wav	95,748	1,085	44100Hz, 16bit, Mono	100%	
aw2_out.wav	310,810	3,523	44100Hz, 16bit, Mono	100%	
C11_連結音.wav	89,952	1,405	32000Hz, 16bit, Mono	100%	
cflange_1.wav	49,940	1,131	44100Hz, 8bit, Mono	100%	
cflange_10.wav	13,098	296	44100Hz, 8bit, Mono	100%	

Unknown decoder/firmware

Memory usage 67% ---

Figure 10.7.1 Example of brightness adjustment for AUX LEDs in DSSP

Adjustments are also possible with CV programming in the command station. Please note that when doing it at the command station, the numbers have different meanings. See CV175-184 for details.

10.8. Servo function

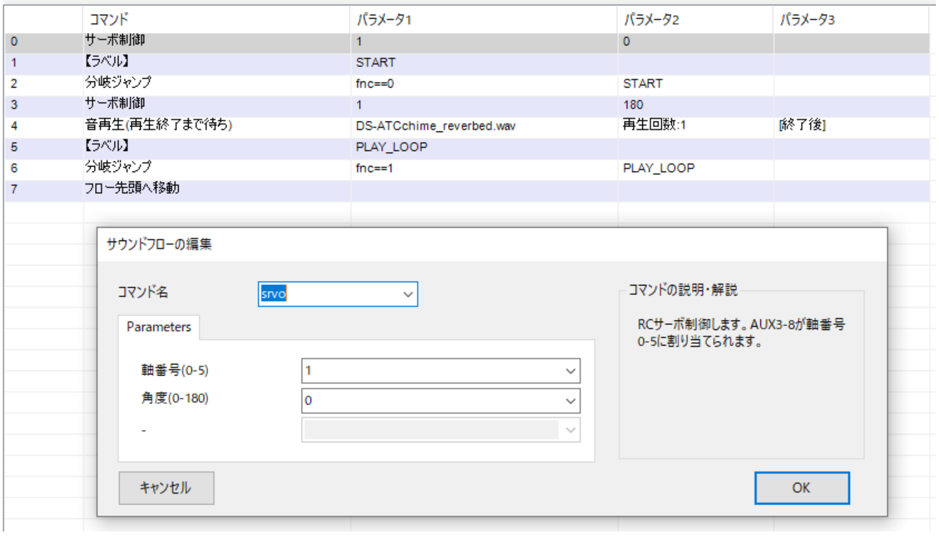
The servo function is implemented so that it can be assigned to AUX3, 4, 5, 6, 7, and 8. Use the AUX signal as it is at the logic level output. For power output, a pull-up resistor must be added. Please note that the power supply is VCC (3.3V) and cannot be supplied from anything other than MTC21.

Please select a type of servo motor that can be driven by 3.3V. There are also servo motors for 5V only, so please check the data sheet carefully. A combination of 3.3V and 5V or a 3.3V dedicated servo motor is preferable. Akizuki Electronics' part numbers are SG-90, FT90B, etc., and there are not so many.

The wiring is as follows: Please make your own connector using the pin header.

Table 10.8.1 Signal Lines of Servo Motors and How to Use them

Signal Wire and Color	How to use signal wires
GND (Tea)	Connect to the decoder's GND pad
VCC (Red)	Connect to the decoder's VCC pad (3.3V)
PWM (Orange)	Connect to one of the decoders: AUX3, AUX4, AUX5, AUX6, AUX7, or AUX8. Please use the logic output output by the decoder. If the power output is through a conversion circuit, the servo motor cannot be used.



	コマンド	パラメータ1	パラメータ2	パラメータ3
0	サーボ制御	1	0	
1	【ラベル】	START		
2	分岐ジャンプ	fnc==0	START	
3	サーボ制御	1	180	
4	音再生(再生終了まで待ち)	DS-ATCchime_reverbed.wav	再生回数:1	[終了後]
5	【ラベル】	PLAY_LOOP		
6	分岐ジャンプ	fnc==1	PLAY_LOOP	
7	フロー先頭へ移動			

サウンドフローの編集

コマンド名: srvo

Parameters

軸番号(0-5): 1

角度(0-180): 0

-

コマンドの説明・解説

RCサーボ制御します。AUX3-8が軸番号0-5に割り当てられます。

Figure 10.8.1 Servo Commands

11.support

11.1. Environmental conditions for operation assurance

The support provided by Desktop Station Co., Ltd. to users is based on the following environment. If we have repaired or adjusted it and confirmed the operation, and if we are using a usage environment, conditions, or settings that do not meet these conditions, we will be deemed to have been able to confirm the operation in the user environment. Please note.

Table 11.1.1 Operating guarantee environmental conditions

	Warranty Compatible Equipment	Other conditions
Command Station	DSair2, DSairLite	The firmware must be the latest version.
decoder	SmileSound Series	The firmware must be the latest version.
Decoder Tester	ESU 53900 Decoder Tester or LaisDcc 860033 Decoder Tester Pro	Even if the user makes his own equivalent equipment, it is not guaranteed to work.
AC Adapter	AC adapter sold by Akizuki Electronics DC12V or DC15V, DC16V	Only AC adapters within 3 years of purchase are guaranteed to operate. We do not guarantee other equipment-based products.
Tracks and locomotives	The track is not used, and the command station and decoder tester are directly connected by the feeder wire. The decoder does not guarantee operation when it is installed in the locomotive.	

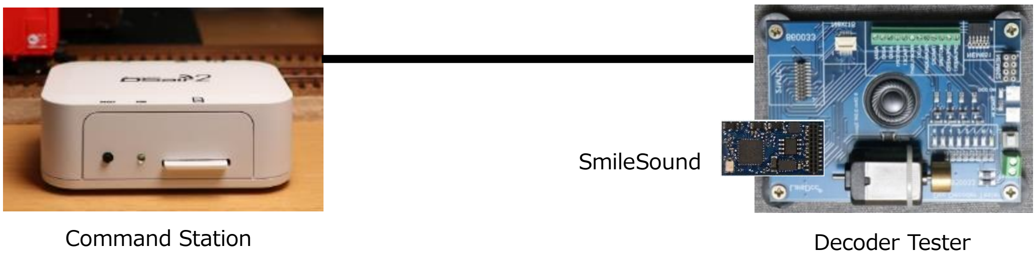


Figure 11.1.1 Operating Guarantee Environmental Conditions

11.2. About the support system

Desktop Station Co., Ltd. is an internet-only system and does not have a physical store or direct support desk. We do not provide any support by phone. In addition, we are strongly promoting business simplification to keep sales prices down. For this reason, unlike ordinary stores, product development, sales, and business operations are carried out with a very small number of people, so various services are omitted. Thank you for your understanding.

Table 11.2.1 Support inquiries and contact points

Support Inquiry Details	Support Contacts
Consultation and questions before purchase Questions and consultations after purchase Consultation on how to use equipment and software Consultation on kit assembly Consultation and questions about installation Compatibility consultation with other companies' equipment When it is not possible to determine whether it is a defect	Digital Model Train Forum https://desktopstation.net/bb/ ・Registration and usage fees are completely free ・Operated by Desktop Station Co., Ltd.
In the event of initial failure In the event of equipment failure (regardless of the free repair period) Inquiries about inventory and delivery dates before purchase Inquiry for missing parts Changing the payment method when placing an order Inquiries about parts distribution, parts replacement, and provision of replacement parts for kit assembly	Please consult with the store where you purchased it. For the Desktop Station Online Store, please contact us via the contact form or email with your order number. We will support you by matching your order number with your purchase history. Desktop Station Online Store https://desktopstation.net/shop/contact Desktop Station Mail Counter support @ desktopstation.net
Inquiries other than those listed above	Desktop Station Mail Counter support @ desktopstation.net *We will not reply to sales emails or inquiries unrelated to our products.

11.3. Questions & Answers

Here are some frequently asked questions. If you have any other questions or consultations, please use the Digital Model Train Forum. We only provide individual support in the event of a breakdown or initial failure, and do not provide support to users for normal use.

Even if you receive an inquiry, we may not respond. Please note.

Please note that any failure caused by the user will be replaced with a fee in accordance with the warranty provisions (Chapter 3).

Digital Model Train Forum:
https://desktopstation.net/bb/

Q. Suddenly, there was no sound and it broke down.

If there is a problem with the handling of the speaker wiring and it is shorted to the track or AUX or COM+ related wiring, the internal IC of the SmileSound will fail. Make sure to do the insulation treatment correctly. In particular, if there are long wires, exposed soldering and conductive parts, or if the decoder or speaker is not fixed, there are many cases where it encounters unexpected parts due to vibration or shock during driving, causing a short circuit.

Q. The volume of the SmileSound mini Next18 is low.

At the discretion of the designers, before the R5, the SmileSound mini Next18 is designed to be more modest in sound volume than the Standard MTC21. Starting with R6 (replaced around September 2024), the design standards are the same as those of other SmileSounds.

Q. Fails to read CV.

If the current consumption of the motor is small or due to compatibility with the command station, the CV readout may fail. The SmileSound decoder is recommended for use in Direct mode.

Also, if there are electronic components such as LED-related components and resistors on the track, it may not be possible to read it well.

Q. If you run it on the tracks, it will stop immediately.

・Do you install capacitors?5.6See The SmileSound Standard MTC21 and mini Next18 will not work properly without the use of capacitors. For products that require an external capacitor, a capacitor is included, so be sure to use it.

・Is it a locomotive that can run normally in analog? A locomotive that cannot run stably in analog will not work normally in DCC.

・Some locomotives have few current collection points, and some locomotives are not originally strong in current collection due to their design. Brass locomotives generally have a single-axle current collector. It is most effective to modify it to a two-axis current collector or to collect current for the whole locomotive using a live coupler. In addition, please use measures against current collection defects, such as strengthening the capacitor and reviewing the wiring.

・It may be caused by the track, feeder wire, or track voltage, not the locomotive. For HO, use 15-16V.

Q. Can I write and use my competitor's sound data?

SmileSound can only use sound data developed for SmileSound. Competitor sound data is created with encryption and special processing based on the specifications and rights of competitors, and we are prohibited by law from infringing on these rights. Therefore, you cannot use any competitor sound data.

Q. Can you tell me how to create sound data?

We do not provide individual training in creating sound data for individual users. Please use the Q&A at SmileSound-related seminars held from time to time. In addition, training for model shops and manufacturers is available for a fee.

Q. Can I write and use SmileSound sample sound data in a competitor's sound decoder?

SmileSound's sample sound data is provided free of charge for SmileSound's sales expansion purposes, and it is strictly prohibited to use some or all of it in a competitor's product. Also, the sound data itself is not compatible, so it cannot be diverted.

Q. If you move it with a large number of locomotives in a large-scale layout, it will be unstable

Due to the influence of the contact resistance caused by the track and joiner caused by large-scale layout and the wiring resistance due to insufficient thickness of the feeder wire, voltage drop may occur, and the current collection of the locomotive itself may increase, resulting in a further increase in voltage drop due to the operation of a large number of locomotives, resulting in insufficient capacitor effectiveness.

The problem can be mitigated by taking the following measures:

- If your command station has an output voltage regulation function, use the adjustment function to increase the output voltage
- Thicker and shorter feeder lines between the command station and the track
- Improve the contact resistance of the joiner

Compared to competing sound decoders, SmileSound tends to consume more power and has the weakness of poor current collection and voltage drop. The parts that can be improved in the firmware are improved from time to time, but the most effective is to reduce the contact resistance and wiring resistance of the layout itself. Based on 1A at 0.1sq (AWG27), consider 5A (AWG20) or higher in HO class and 3A (AWG22) or higher in N class.

12.Configuration Functions and CV

The DCC decoder has a "CV (Configuration Variables)" defined as a configuration function. Here are some settings that can be changed in the CV. In fact, the sound data contains CV information as a set, which is linked to the content described here.

12.1. CV List

The following is a list of CVs that are standard in SmileSound. The initial values listed here vary depending on the sound data, so please refer to them.

Table 12.1.1 CV List

CV Number	category	Function Description	Initial value
CV1	indispensability	Short address	3
CV2	indispensability	Starting Voltage	8
CV3	indispensability	Acceleration time (time divided by 0.6 seconds)	120
CV4	indispensability	Deceleration time (time divided by 0.6 seconds)	90
CV5	indispensability	Maximum voltage	200
CV6	indispensability	Intermediate voltage	70
CV7		reservation	-
CV8		reservation	-
CV9	Motor control	PWM Carrier	0 (32kHz)
CV10	Motor control	BEMF Cutout Factor	2
CV17	indispensability	Long Address LSB	0
CV18	indispensability	Long Address MSB	0
CV19-27		reservation	-
CV28	indispensability	RailCom Enabled Settings	1
CV29	indispensability	Decoder Settings	10
CV30-53		reservation	-
CV54	Motor control	BEMF coefficient (1.0 times .48 divided by 16 is 3.0 times)	96
CV55	Motor control	PI controller P-gain	16
CV56	Motor control	PI controller I-gain	32
CV57	Steam function	For steam locomotives, sound generation intervals at low speeds	0
CV58	Steam function	For steam locomotives, sound generation interval at high speed	0
CV59-CV61		reservation	
CV62	sound	Measures against current collection failures, automatic sound OFF (energy-saving power cut)	0
CV63	sound	Master Volume	128
CV64	Motor control	Kick-start switching speed	50
CV65	Motor control	Kick Start Voltage	0
CV66		reservation	-
CV67-94	Motor control	Speed curve	-

CV95		reservation	
CV96-CV104		Reservations (NMRA regulations)	
CV105-CV117		reservation	
CV118	Motor control	BEMF detection timing	30
CV154	sound	User Volume Settings	255
CV155-170	other	User CV settings (free for users)	-
CV175-184	AUX	AUX Brightness Setting (0: Maximum Brightness, 255: Light Off)	0
CV185	AUX	Headlight and AUX output settings	0
CV186	AUX	Taillight and AUX output settings	0
CV187	AUX	AUX1 and AUX Output Settings	0
CV188	AUX	AUX2 and AUX Output Settings	0
CV189	AUX	AUX3 and AUX output settings	0
CV190	AUX	AUX4 and AUX output settings	0
CV191	AUX	AUX5 and AUX Output Settings	0
CV192	AUX	AUX6 and AUX Output Settings	0
CV193	AUX	AUX7 and AUX Output Settings	0
CV194	AUX	AUX8 and AUX Output Settings	0
CV195		reservation	0
CV196	sound	Equalizer Low Frequency (-800Hz)	16
CV197	sound	Equalizer High Frequency (4kHz-)	16
CV198-255		reservation	0

12.2. CV Description

Here, we will explain how to set up each CV and what to keep in mind.

CV1 Short Address

Set the address to be used in the basic address mode called short address. This is usually the default value of 3. Set a value of 1-127. In addition, in the European style command station, it is in the range of 1-99. In the American style command station, it will be 1-127. Numbers greater than this range must be set as long addresses (address modes using CV17 and CV18).

CV2 Starting Voltage

Specifies the amount of voltage at which the locomotive will start moving. 255 is the maximum voltage, 0 is no voltage, and 127 is exactly half the voltage. Values around 10~70 are selected. In many cases, the N-gauge value is 20 or less. Large locomotives tend to choose large numbers.

It also depends on the weight of the locomotive and the gear ratio. Basically, it is better to specify the motor setting file provided by DSSP when writing sound data and fine-tune it on the actual locomotive.

CV3 Acceleration Time

It is determined by the sound data. The value set for CV3 divided by 0.6 is the acceleration time [sec].

CV4 Deceleration Time

It is determined by the sound data. The value set for CV4 divided by 0.6 is the deceleration time [sec].

CV5 Maximum Voltage

When the maximum speed is set at the command station, the amount of voltage applied to the motor is determined. By daring to make it smaller, you can also adjust it so that it does not go at a dangerous speed. If you set 255, it will output the same voltage as the voltage applied to the track.

It is generally about 150 for N gauge and about 200 for HO or higher. If you want to use a speedometer to match the scale speed, you will mainly adjust this CV5.

CV6 Intermediate Voltage

Specifies the magnitude of the voltage between CV2 and CV5. If there is no particular reason, set the value of (CV2+CV5)/2. If you want to adjust to a strict scale speed, you can adjust this CV6 to match the scale speed over a wide range. Note that this CV value is ignored when using the speed curve.

CV8 Manufacturer ID and Factory Initialization Settings

Writing "1" in CV8 reverts to the initial CV value contained in the sound data.

When the CV8 is read, the manufacturer ID number 140 of the desktop station can be read.

CV9 PWM Carrier Frequency

PWM carrier frequency can be adjusted. The default is 0 (32 kHz). If you use a coreless motor, use a higher frequency. When using a coreless motor, using a low frequency can lead to a short-circuited situation.

The lower the carrier frequency, the more powerful the movement tends to be at lower speeds. Note that if the carrier frequency is lowered, you can hear a growling or squeaking sound from the motor, but it is not abnormal. It is desirable to set it higher than the human audible range (6 kHz or more), but if you value low-speed driving, you can deliberately set it to 500 Hz or less.

The movement varies greatly depending on the motor, so please adjust it yourself and find the optimal value.

Table 12.2.1 Specification of PWM carrier frequency for CV9

CV9 Values	PWM Carrier Frequency
0	32kHz
1	24kHz
2	16kHz
3	12kHz
4	10kHz

5	8kHz
6	6kHz
7	4kHz
8	2kHz
9	1kHz
10	500Hz
11	250Hz
12	130Hz

CV17 Long Address LSB

192-230. Use in conjunction with CV18.

CV18 Long Address MSB

128-255. For use in conjunction with CV17.

CV29 Decoder Configuration

Perform the standard settings for the decoder. The formula for setting CV29 is as follows, but it is difficult to understand, so you should usually use DSSP to make the basic settings. Also, please use DSairLite to change your address. You can easily and automatically change the contents of CV29 appropriately without any special operation.

$$CV29 = Bit0 * 2^0 + Bit1 * 2^1 + Bit2 * 2^2 + Bit3 * 2^3 + Bit4 * 2^4 \\ +Bit5 * 2^5 + Bit6 * 2^6 + Bit7 * 2^7$$

Table 12.2.2 CV29 decoder settings mean

Bit	function	Meaning of value
0	Setting the reference direction of travel. FWD and REV can be swapped. 0: Direction of travel remains the same When 1: Reverse the reference of the locomotive's direction of travel.	0: FWD, 1:REV
1	Speed step. smoothness of speed changes; Usually set to 1. 0: Works with older 14-step signals 1: Enables 28 or 128 step speed resolution.	0: 14steps, 1: 28/128steps
2	Analog operation function. SmileSound is not supported.	(Values are ignored)
3	Using RailCom/Bidi (In-Flight Communication) When 0: RailCom/Bidi does not use 1: Reacts with RailCom/Bidi signal	0: Unused, 1: Used
4	Use of speed tables.	0: Unused, 1: Used

	0: CV2, CV5, CV6 are used for the speed curve. 1: Use the speed curve defined in CV67~CV94	
5	Specifying Short/Long Addresses At 0: Use CV1 as the address of the loco. 1: Use CV17, CV18 as Loco address	0: Short, 1: Long
6	reservation	
7	reservation	

CV54 BEMF coefficient

BEMF coefficient. 1.0 in 16. 64 at 64/16 = 4.0 times. Only when PI is in control will it affect the running speed. The higher the value, the slower the maximum speed. If you make it smaller, it will run faster. Please note that the appropriate value will change depending on the configuration of the motor, gear, wheel, etc. If it is an N-gauge locomotive, it will be around 64-128. In HO No. 16, the internal structure, gear ratio, and motor characteristics of the locomotive are very different, so the numerical value must be determined for each locomotive.

CV55 PI Controller P-Gain

BEMF PI control mode P gain. The difference between the speed detected by the BEMF function and the speed command sent from the command station is output to the motor with P gain. If you make it larger, the more it will fluctuate, but it will be easier to follow the speed.

CV56 PI controller I-gain

BEMF PI control mode I gain. The result of integrating the difference between the speed detected by the BEMF function and the speed command sent from the command station is output to the motor. If you increase it, the effect of the integral will be weakened.

CV57 Steam Locomotive Low Speed Sound Generation Interval

9.10See

CV58 High speed sound generation interval for steam locomotives

9.10See

CV62 Energy Saving Mode

When the sound is on and the driving state is on, the unnecessary circuitry of the internal computer is stopped and put into energy saving mode. Stop the circuits necessary for communication with DSSP. It does not affect the operation of the DCC in any way. Normally, set 0.

Valid at 0, disabled at 1.

CV63 Master Volume

You can set the master volume for the entire decoder.

CV64 Pulse Assist Time

Pulse assist time. Decide how often you want to output pulses. The unit is ms

If you do not use the pulse assist function, CV64=0. When using CV64=15, the default setting is CV64=15, so the pulse assist time is 15ms and is set to "normal". Longer pulse assist time increases the time it pops out. Depending on the specifications of the motor, it may not start running unless it is longer, so if the CV65 described later is not enough, try increasing the time of the CV64 little by little.

For more information,9.4Please refer to.

CV65 Pulse Assist Voltage

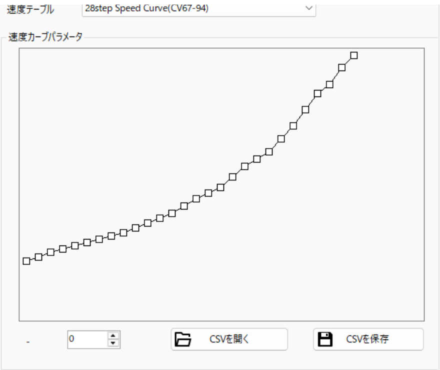
If you do not use the pulse assist function, CV65=0.

The CV65 is based on a standard 205 for the degree of pulse assist force, so the Duty is 40%. Reducing the value of CV65 reduces the force to pulse assist. If the locomotive pops out, make the CV65 smaller to fit the jump, so find the right lower limit.

For more information,9.4Please refer to.

CV67-94 Speed Table

This is a parameter that fine-tunes the speed increase that can be used when the speed table is enabled in CV29.



速度テーブル: 28step Speed Curve(CV67-94)

Figure 12.2.1 Speed table example

CV118 Measurement Gap

Set a value of 3~40. The value of 1/10 (0.3~4.0 ms) is used as the adjustment value for BEMF detection. Depending on the type and characteristics of the motor, this value is adjusted to determine when the BEMF is easy to detect. Normally use the default value of 30 (3ms) and make adjustments if there are any problems.

CV154 User Volumes

This is a volume that the user can freely configure for CV63. CV63×CV154 are the actual volumes. The volume that can be controlled with F7 in Open Sound Data is CV154.

CV175-184 AUX Brightness Settings

The CV175 to CV184 can set the brightness (Duty) of the PWM output of the headlights, taillights, and AUX. One thing to note is that 0 is the maximum (Duty 100%, the brightest), 127 is half brightness (Duty 50%), and 255 is off (Duty 0%).

Table 12.2.3 CV175-184 AUX Brightness Settings

	Supported CV number	Max voltage	Half voltage	Shine a little
headlight	CV175	Set 0	Set 128	Set 200~240
tail light	CV176			
AUX1	CV177			
AUX2	CV178			
AUX3	CV179			
AUX4	CV180			
AUX5	CV181			
AUX6	CV182			
AUX7	CV183			
AUX8	CV184			

CV185-194 AUX Lighting Method (Production Effect)

You can set the lighting method and production effect of HL/TL and various AUXs. The effect will only be performed when the lights are turned on (ON) from off (OFF). When the lights are turned off from ON (on) to OFF (lights off), the production effect is not performed.

Table 12.2.4 AUX lighting method (production effect) selection

CV number and assignment	Set value	Lighting method
CV185 HL CV186 TL CV187 AUX1 CV188 AUX2 CV189 AUX3 CV190 AUX4 CV191 AUX5 CV192 AUX6 CV193 AUX7 CV194 AUX8	0	Fast ON
	1	Slow ON
	2	Triangle wave
	3	Random
	4	Mars light
	5	Flash light
	6	Single pules strobe
	7	Double pulse strobe
	8	Medium Pulse Strobo
	9	Glow Tube Fluorescent Lamp
	10	broken Fluorescent lamp
	11	Triple Flash
	12	Random Four

CV196 Equalizer Low Frequency

The sound component of the low frequencies (below 800 Hz) can be made larger or smaller. Set a value of 1-32. 16 is the low-frequency component is unchanged, 17~32 is the low-frequency enhancement amount, and 1-16 is the low-frequency reduction amount.

This function is greatly affected by the characteristics of the speaker itself, the enclosure, the method and location of the speaker, and the surrounding structure. Please note that small speakers or thin, small enclosures may not provide the expected bass enhancement effect.

CV197 Equalizer High Frequency

The sound component of the high frequencies (4kHz or more) can be made larger or smaller. Set a value of 1-32. 16 is the setting of the high frequency component without change, 17~32 is the enhancement amount of the high frequencies, and 1-16 is the reduction of the high frequencies.

13.Bibliography

SmileSound was developed using the following references, OSS, software, specifications, etc. Thank you.

- NMRA DCC Standard
- RailCommunity Open Data Sheet (RCN)
- DCCwiki (https://dccwiki.com/)
- Arduino, Arduino IDE, Arduino eco system
  https://www.arduino.cc/
- Pico-SDK
  https://github.com/raspberrypi/pico-sdk
- Arduino Pico library for earlephilhower
  https://github.com/earlephilhower/arduino-pico
- NMRA Digital Command Control (DCC) Library
  https://github.com/mrrwa/NmraDcc
- mklittlefs https://github.com/earlephilhower/mklittlefs
- uf2 https://github.com/microsoft/uf2

14.Thanks

SmileSound is developed and operated by the following companies and development members: We would also like to express our gratitude to the creators of Sound Data and the volunteer development collaborators who are not listed here.

- Dear Desktop Station Co., Ltd.
- Nagoden
- Fujigaya2
- TRAINO
- Maison de DCC
- SmileWorks
- HMX

SmileSound

USER'S MANUAL

SmileSound

FULL PROGRAMMABLE SOUND DECODER

Desktop Station