



# **Pulsed Smoke Generator**

**8412101 – 5V Version**

**8412201 – 19V Version**

Version1.0 – 04/08

# **! ATTENTION !**

**The setting of the function outputs of the decoder is full track voltage!**

**Make sure that the output feeding the Pulsed Smoke Generator is set to the appropriate value**

**PRIOR OPERATION!**

**We cannot be held responsible for damages if this is disregarded.**

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## **1. Safety Details**

Congratulations on your purchase of the MASSOTH Pulsed Smoke Generator.

We highly recommend reading this manual and the documentation carefully and thoroughly before operating your new smoke generator.

### **1.1. Brief Description**

The MASSOTH Pulsed Smoke Generator is designed for the use in G-Scale steam locomotives and Diesel locomotives. The MASSOTH Pulsed Smoke Generator may produce pulsed smoke or steady smoke which varies with the load of the locomotive.

### **1.2. Warning Notes**

- The smoke generator produces heat beyond 212°F! Install the smoke generator in a place where no damage may result due to the high temperatures.
- Please adhere to the Safety and Warning Information of the smoke fluid purchased.
- The smoke generator is available in two versions (5Volt and 19Volt). Please make sure to use the correct supply voltage. A wrong decoder setting may lead to damage of the smoke generator or the decoder.
- The power consumption may be up to 650mAmps. Please make sure that the decoder used is capable of this handling this load.

- Do not turn the smoke generator upside down if filled. Spilled smoke fluid may lead to damage and severe burns.
- **This product is not a toy.**

### 1.3.Important Information for the Operation

Install your MASSOTH Smoke Generator in compliance with the wiring diagram in this manual. The MASSOTH Smoke Generator is protected against excessive loads. However, in case of a connection error e.g. a short between pulse and motor power, the smoke generator may be destroyed subsequently.

### 1.4.Summary of Functions

- Smoke generator for steam and Diesel locomotives
- In steam operation 2 or 4 chuffs per wheel rotation selectable
- Synchronized by a wheel-operated pulse generator or by a simulated pulse generated by the decoder.
- Load-dependent operation in connection with MASSOTH decoders
- Individual control of the heating element and the pulsator for optimum smoke effects.
- Overload protection and dry-run protection.
- Period of operation approx. 30min per filling depending on the operation.

### 1.5.Versions

- 5Volt-version for the use with locomotives featuring a 5Volt regulation (e.g. for analog operation or analog/digital operation)
- 19Volt-version which is ideal for digital operation (e.g. with Massoth decoders).

Table of **CV53** dimming values depending on different track voltages:

Track voltage	Dimming percentage	CV-value (eMOTION)	CV-value only F1 (eMOTION)
19 Volt	no dimming	32	96
20 Volt	dimming 95%	30	94
21 Volt	dimming 90%	29	93
22 Volt	dimming 86%	28	92
23 Volt	dimming 82%	26	90
24 Volt	dimming 78%	25	89

These values are based on general experience. In case of major voltage losses on the track these values need adjusting.

### 1.6.Scope of Supply

- Pulsed Smoke Generator with leads
- Lead for the pulse generator
- Manual

## 2. Hook-Up and Installation

Install the MASSOTH Pulsed Smoke Generator in an appropriate location below the smoke stack or the exhaust. The distance between the heating element and the top of the smoke stack or exhaust should not exceed 2 in. Make sure that the connection to the locomotive's body is water-tight (we recommend to use a silicone tube). Please pay close attention to the voltage of the power supply used (see Technical Specifications Page 6)!

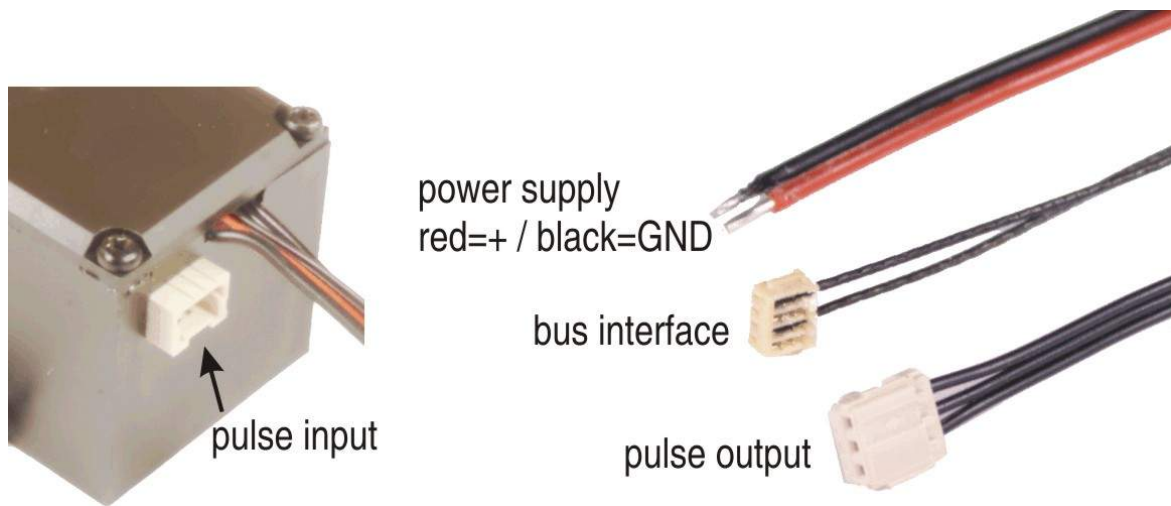


Illustration 1: Terminal Assignment

### 2.1. Basic Hook-Up w/o Pulse Generator + load-dependent Operation

- The red lead connects to the power supply (5Volts resp. Dec+)
- The black lead connects to "GND" or switched GND (e.g. function output).

This simple setup provides a steady smoke generation for a Diesel locomotive.

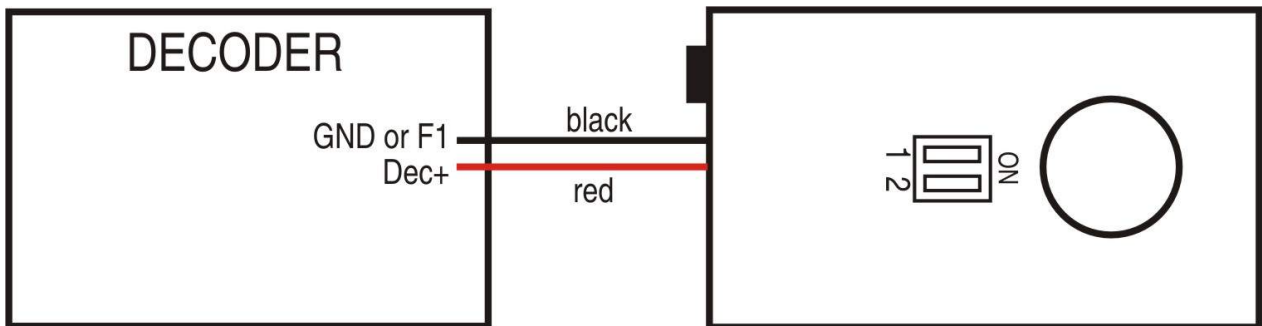


Illustration 2: Basic Hook-Up w/o Pulse Generator + load-dependent Operation

### 2.2. Hook-Up with an existing LGB® Pulse Generator

The hook-up of a pulse generator is very simple in case your locomotive already has an on-board decoder with sound.

- Unhook the pulse generator lead (3x black) from the sound PCB and connect it to the smoke generator.
- Use the provided pulse generator lead to connect the smoke generator to the vacated sound connector.

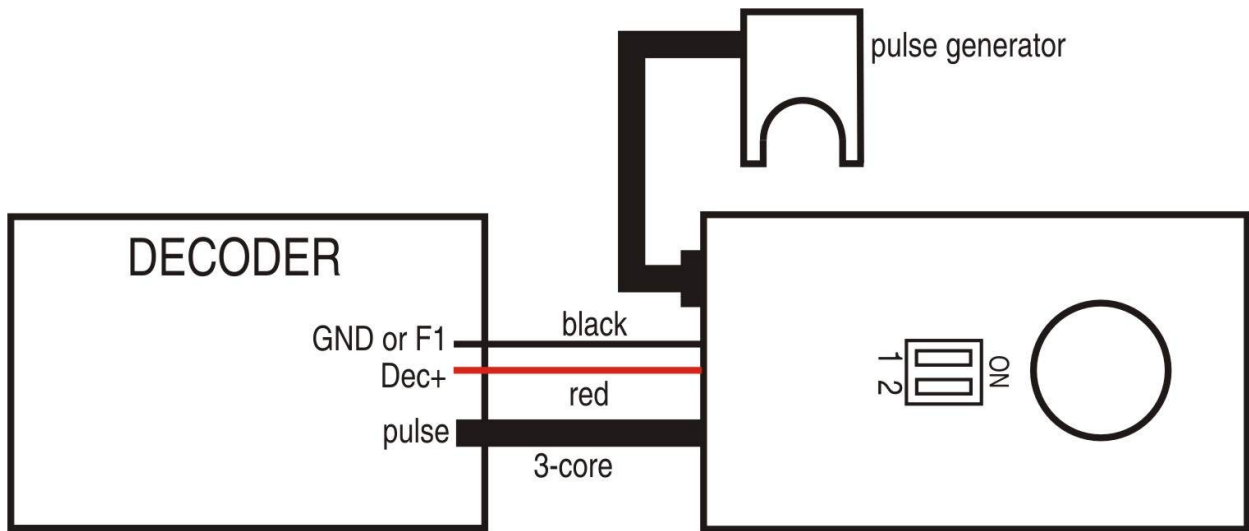


Abbildung 3: Hook-Up to a LGB® Pulse Generator

### 2.3. Hook-Up with a Pulse Generator Simulation

MASSOTH eMOTION Loco Decoders feature a pulse generator simulation depending on the wheel RPM. There is no need to install a pulse generator in the gear box of the locomotive. Connect the two leads to the decoder according to the illustration. The third lead is not required in this case. Cut the wire and cap it.

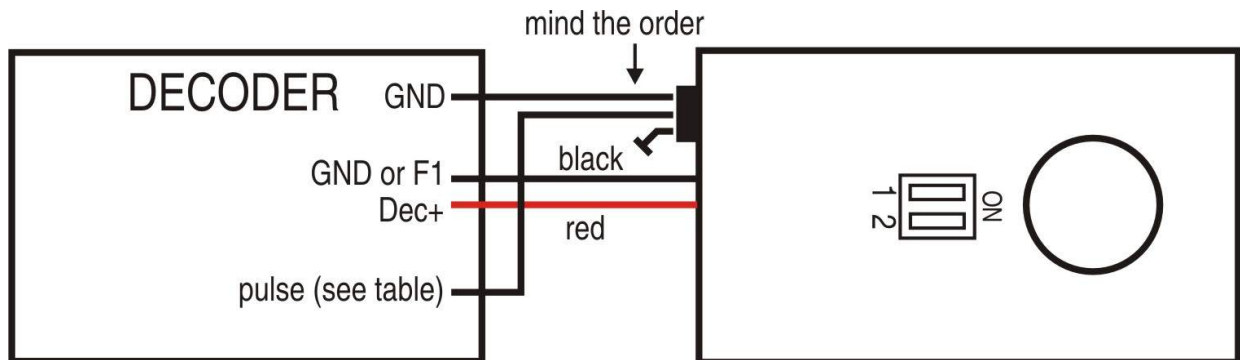


Illustration 4: Hook-Up with a Pulse Generator Simulation

Decoder	Output	CV
L	F6	120 = 1...16
XL	F6	120 = 1...16
LS	F3	114 = 30
XLS	F3	114 = 30

### 2.4. Hook-Up for a load-dependent Operation

Connect the two-core lead with the four-pin connector the respective terminal of the Massoth eMOTION Loco Decoder.

Notice: **Do not pull at the cable** in case you want to unhook the bus-cable! Do use tweezers or a small screwdriver to remove the connector from the terminal.

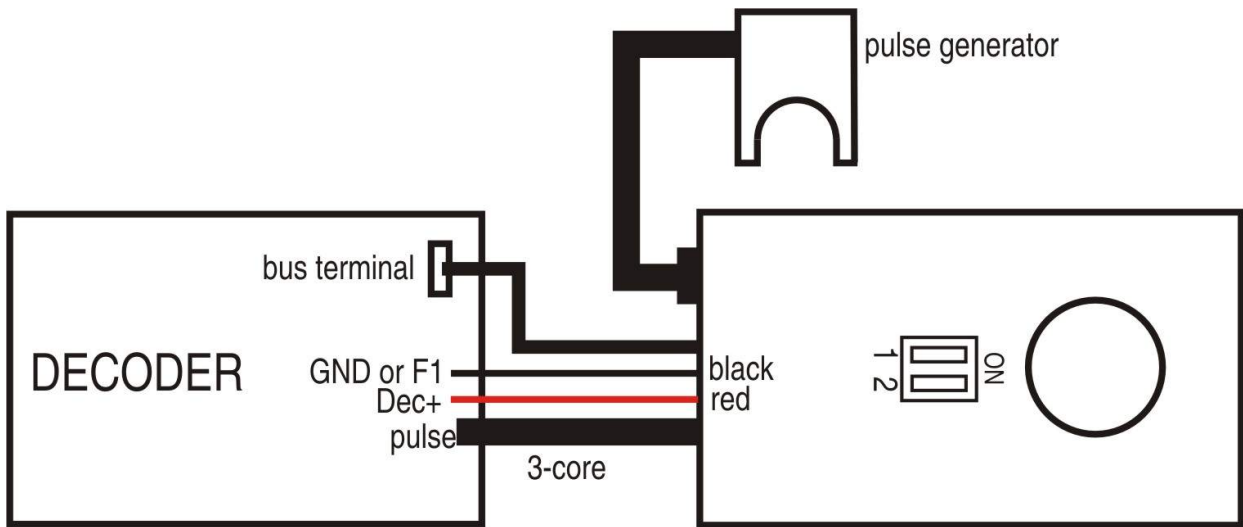


Illustration 5: Load-dependent Operation

### 3. Operation of the Pulsed Smoke Generator

Choose the operational modes prior to the final installation. Select steam or Diesel operation and the trigger rate of the sound.

The following modes are set by DIP-switches:

- DIP-Switch 1 : OFF = Steam, ON = Diesel
- DIP-Switch 2 : OFF = 1 chuff per pulse, ON = 1 chuff per every 2. pulse

Make sure your smoke generator setting matches the setting of your sound unit.

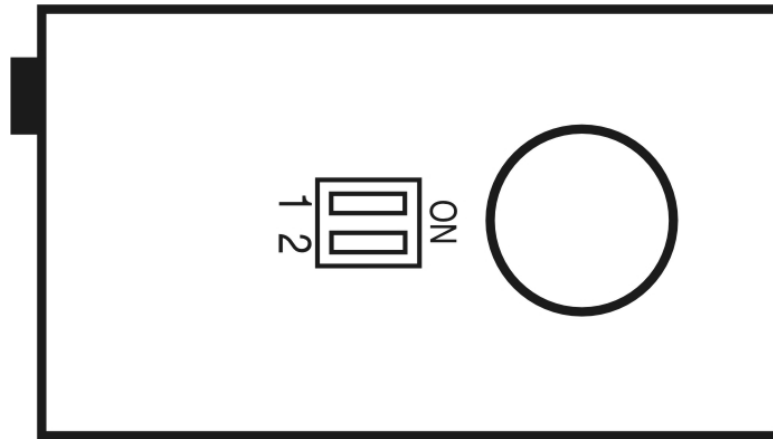


Illustration 6: Mode Dip-Switches

The pulsed smoke generator outputs one pulse per chuff to the sound unit to synchronize the cuffs with the sound. **The XLS CV-setting for CV195 is "1" for all dip-switch positions of the smoke generator.**

#### 3.1. Automatic Sequences

With the locomotive stopped, the smoke produced is very small. When the locomotive starts to move and when operating under load the smoke production is at it's peak. When driving without load (when braking or driving downhill), no smoke is produced. These functions are only available with a pulse generator and if the load-dependent operation is activated.

### 4. Safety Features

The MASSOTH Pulsed Smoke Generator features a thermal dry-run protection. The temperature of the heating element is automatically lowered in case the smoke fluid is finished. However, for the sake of a long service-life

it is recommended to avoid prolonged operation without smoke fluid. Switch off the unit if dry or refill it.  
**Do not fill the unit to the brim. Spilled smoke fluid may cause damage in the locomotive. The generated smoke decreases significantly if the smoke unit is overfilled.**

## 5. Technical Specifications

Power Supply: 5 Volts – 7Volts DC (5V-Version)

18 Volts - 24Volts DC (19V-Version)

Operating Current: approx. 500mAmps - 650 mAmps (5V-Version)

approx. 120mAmps - 150 mAmps (19V - Version)

Operating Temperature: -4° F.. +122° F

Capacity: Optimum = 4cm<sup>3</sup> (Maximum = 10 cm<sup>3</sup>)

## 7. Miscellaneous

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This Decoder conforms to the CE Standards

**RoHS**

This Decoder is manufactured according to the latest EG Standards for lead free manufacturing conforming to RoHS Standard.



Please dispose of according to your State regulations.



Do not dispose of in open fire.

## 5.1.Warranty and Support

### Warranty:

MASSOTH ELECTRONICS USA warrants this product for 1 year from the original date of purchase. This product is warranted against defects in materials and workmanship. Peripheral component damage is not covered by this warranty. Normal wear and tear, consumer modifications as well as improper use or installation are not covered. Errors and changes excepted.

### Warranty Claims:

Valid Warranty Claims will be serviced without charge within the warranty period. To initiate a warranty claim, please contact your dealer or MASSOTH ELECTRONICS USA for an RMA (Return Merchandise Authorization). MASSOTH ELECTRONICS USA cannot be responsible for return shipping charges to our repair facility. Please include your Proof of Purchase with the returned goods.



**Support:**

For support and technical questions contact: [sales@massoth.com](mailto:sales@massoth.com)

**5.2.Hotline**

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