Newsletter May 2022
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Automatic registration
according to RCN-218
for ZIMO decoders

A little more than 2 years ago, after the realization of the so-called "**Aufgleissuche**" ("On-track Search"), ZIMO started what was then a forward-looking development called "**Bestandssuche**" (Stock Search). The designation goes back to the basic idea that an already registered vehicle "stock" (decoders) in the system should be updated, i.e. missing engines removed and supplemented by new, self-registering vehicles.

In the meantime, the RailCommunity (VHDM) standard RCN-218 has been created, which defines DCC commands and RailCom messages for such a procedure under the title "**Automatic registration**". This ensures future interoperability in this respect between digital systems and decoders from different manufacturers.

VERY simplified description of the "ZIMO Stock Search" or "Automatic Registration":

The **new version** of the "**Stock Search**", as per RCN-218 standards, is initiated at the ZIMO cab MX33; then all MS decoders (and future types) on the layout report RailCom messages in a statistical process via "LOGON". These addresses are compared with the existing addresses in the "object database" (the "stock") to identify which decoders are still available, which are missing, and which are new.

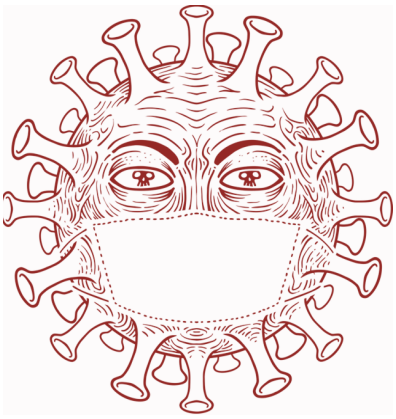
The ZIMO system does not just simply list decoder messages, but always supports the user by diplaying valid data on the cab.

NOTE: Display texts are not final.

Often the case: an already known decoder ("ALT/OLD") answers; Address in the database turns orange for confirmation.

In this case: an unknown decoder is reported; it can be accepted as "NEW" with its current address (also automatically) or with a manually changed address.

In this case: an unknown decoder is reported; however, its address is already assigned elsewhere in the database (therefore: ... no entry). A replacement address must be typed in, which can also be done automatically. Then the entry is made by forming a "NEW" line (left image).



Free picture from Gordon Johnson at Pixabay

Model railroad exhibitions were cancelled again this spring: Mannheim, Dortmund as well as Nuremberg. However, **smaller events** with ZIMO participation take place between May and July: Bochum Gartenbahn (20. - 22. May), Gießen Spur 0 & Spur 1 (11. - 12. June), Speyer Spur 1 (instead of Sinsheim); planned for this fall are: Leipzig, Bauma, Friedrichshafen.

The upcoming spring exhibitions are all large-scale oriented, but may also be attractive as meeting places for "small-scale" model railroaders.

ZIMO, as one of the larger decoder supplier to model train manufacturers and the trade, is of course also affected by the well-known **shortage of electronic components.**

However, ZIMO and ZIMO customers benefit from the high manufacturing depth (in-house production) and the efficient development department, which often finds alternatives in the event of long-term shortages.
Unfortunately, certain restrictions are unavoidable, such as the currently unavailable STACO1 or the delay of the MXULFA (but production will resume in May – with improved hardware).

The **prices** do not remain unaffected either, so the following likely applies: Anyone who does not have to make a price adjustment in 2022 has charged excessive prices in the past ... and ZIMO has not done the latter.

But despite the current difficulties, ZIMO is creating a lot of new things: conversion of the non-sound MX decoders to the new "MS technology" of the MS sound decoders, new light boards and smoke generators. The new MX33 cab is nearing completion (admittedly "not quite" on time).

And on ***July 14*** there will again be a ***ZIMO seminar at*** *(s. www.zimo.at/events)*

Pre-register now: office@zimo.at

Current state of development:

Large-Scale Smoke Generator

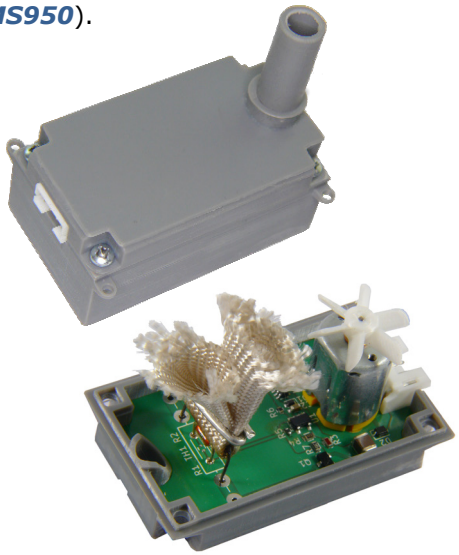
The "single" smoke generators will be available shortly, i.e. with one heating element and one fan.

The special ZIMO features:

- a temperature sensor protects the heating element from overheating and destruction when tank is empty.
- no other electronics in the smoke generator; No SUSI interface or similar, only 4 wires for direct control by the ZIMO decoder: which knows the smoke and blower output requirements from motor regulation and other specifications better than any integrated smoke generator electronics could.
- low-cost solution by eliminating extra electronics.
- several variants, with different shapes and dimensions or capacities, can also be produced in small quantities: by 3D printing with SLA technology (= **S**tereo **L**ithography **A**pparatus).

The prices of the new smoke generators will not differ much from the types sold up to now.

For a long time, all ZIMO large scale decoders - but especially the current types - are designed for the control of pulsed smoke generators and also for "dual" types, i.e. with 2 heating elements and 2 fan motors. Direct connections are available at the decoder (currently with the ***MS990*** large-scale decoders for G & 1 gauge, and the 0 gauge decoder ***MS950***).



Smoke generator prototype shown with dimensions of 49 x 29 x 23 mm (dim. without screwed on chimney extension).

The circuit board only contains the safety shutdown against overheating, therefore little effort and low costs compared to smoke generators with an integrated decoder or with SUSI.

Continued from preyious page (Automatic Registration…)

The "**GUI transmission**" *) from a decoder into the system is perhaps even more important in practice than the actual registration as part of the "Stock Search"; it is either started at the end of the search or independent, it also takes place via the RailCom feedback channel.

*) The "GUI" (the Graphical User Interface) consists of a collection of images, symbols and controls that are specific to each vehicle type and allows for convenient operation of the locomotive (the train) from an operating device (cab, app, ...).

The type of display may differ from cab to cab, so ZIMO decoders (MS, MN generation) are designed to keep the elements for different GUIs in their own memory and to transmit them to the respective digital system as required.

ZIMO sound decoders containing a sound project display the correct locomotive image, the name, the function symbols, the speedometer, etc. on the ZIMO cab - regardless of whether they are installed in a locomotive at the factory or added later - and transmit them to third-party systems (if the capability is provided), at the least the appropriate standard GUI.

"Before"

After GUI transmission

Sound-Decoder without Sound ?

The new MN-(Non-Sound)-Decoder

So far, these decoders were announced as MS non-sound decoders, the naming convention for the entire current decoder generation has now been redefined:

M = Motor, S = Sound, N = No-Sound, F = Function

MS-Decoder: Sound-Decoder from MS440 to MS990 (in production)
MN-Decoder: Non-sound decoder (gradual introduction from July 2022)
FS-Decoder: Function decoder with sound, derived from the MS decoders*)
FN-Decoder: Function non-sound decoder, derived from MS decoder (2022)*)

*) In addition, all MS and MN decoders can be reconfigured to behave like "real" FS and FN function decoders in the future.

Locomotive decoders without sound are a dime a dozen on the market, and there are perhaps three times as many manufacturers as compared to sound decoders. Seen in this way, ZIMO could do without this rather stagnating market segment and concentrate on the technically more sophisticated sound decoders (which "not just everyone" can do), or continue to offer the existing MX decoders for the non-sound sector.

But ZIMO would like to - and this is with certainty in the interests of the customer - offer the **best possible solution** based on the current technological status in every area: an alternative world to "cheap & easy". It is advantageous in several respects if the decoders used on the layout are **"from a single source**".

As in the MX era, the ZIMO non-sound decoders - now the MN decoders - will be available in all technically feasible dimensions, with all interfaces as well as wired.

The difference between the past and today: back then there were first the decoders without sound (MX), from which the sound decoders (also MX) emerged. Now the MN decoders use the previously introduced MS technology; i.e. **non-sound is based** on the **sound decoder.**

This does not result in the cheapest construction for the new "normal non-sound decoder", but has an overall advantage: by adopting central elements of the MS sound decoder, in particular the very powerful

Thinking a little further than elsewhere...

ZIMO light boards

There are now five types of light boards available: in addition to the LIPL1N18 presented in the last newsletter, the following were added: LIPLDHW1, LIPLDHY1, LIPLDNW1, LIPLDNY1 (the latter differ from each other in length and color).

All ZIMO light boards are controlled by a ZIMO function decoder, either integrated or a plug-in version, and so offer all ZIMO characteristics.

The most important special feature is the so-called SECOND ADDRESS. This second address in function decoders (and thus also in light boards) is typically set to the same address as the locomotive. This opens up the possibility to control **all coach lights** of a train as well as marker and taillights through **the loco function keys** (only one decoder address).

Special CV sets in the function decoders (through a new SW-version) makes this possible.

Typical (but not the only possible) **configuration** for the light circuit boards of a train: the SECOND ADDRESS in each car is programmed to the address of the locomotive, but a different CV set is activated in the individual cars, so that the interior lights are assigned to different function keys:

1. Coach: CV #8 = 102 (CV-Set 102 active) sets the SECOND address for:
   F13 → Lfor or Lrev + FO1
   F14 → entire interior lighting
2. Coach: CV #8 = 104 (CV-Set 104 active) sets the SECOND address for:
   F15 → Lfor or Lrev + FO1
   F16 → entire interior lighting

and so on (tube flickering also possible)

or:

1. Coach: CV #8 = 118 (CV-Set 118 active) sets the SECOND address for:
   F13 → Lfor or Lrev + FO1
   F14 → front interior lights
   F15 → center interior lights
   F16 → rear interior lights

and so on.

Various CV sets are available for different key contingents and divisions, with flickering effect, etc.

In addition, the individual light circuits (usually 4 or 8) of each coach can be switched individually via the "normal" addresses (the FIRST addresses) of the light circuit boards (function decoders) according to the "principle of the last change".

microcontroller, and keeping important properties completely identical allows us to develop future features simultaneously for either decoder type.

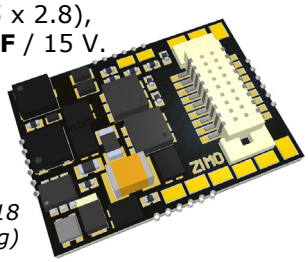
Thus, motor control (a well-known highlight of the ZIMO decoder technology) or the light effects, but also ZIMO specialties such as the "Swiss mapping" etc. are available without any compromises, even on non-sound decoders.

Particularly worth mentioning is the method of **"decoder projects"**, the future counterpart to the "sound projects" for sound decoders. This means that non-sound decoders can also be preset for a specific application (locomotive type, model ...). So a project essentially contains a ready-made CV list and data blocks for GUIs (see previous page).

The **MN180N18 is the first MN decoder** to be launched - the successor to the MX618N18, i.e. with a Next18 interface. In addition to the fundamental advantages of the MN generation compared to the MX described above, there are also the following new features (improvements):

Dimensions: **13.3 x 9.5 x 2.6** mm (before: 15 x 9.5 x 2.8), direct external capacitor connection **up to 15.000 µF** / 15 V.

Other technical data:
0.8 A continuous (1.5 A peak),
4 Fu-outputs, 2 Logic-level outputs,
2 SUSI-Pins (as expected with ZIMO: configurable as either SUSI, logic level outputs or inputs, I2C bus)



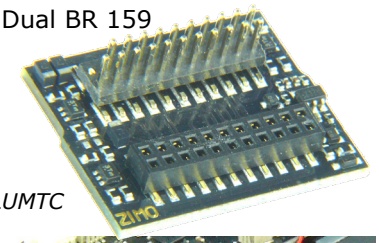
MN180N18 (CAD-Drawing)

When the ZIMO decoder is actually "undesirable"...
The ADAPLUMTC Adapter

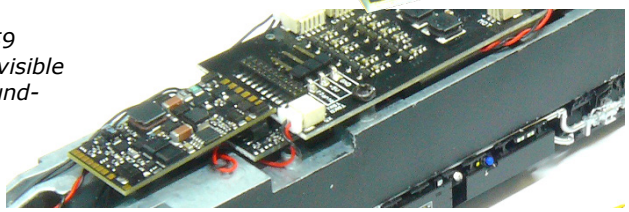
There are locomotives with an MTC interface that is designed in such a way that only decoders from the supplier of the permanently installed locomotive circuit board function fully: in such cases, a higher logic level voltage (5V) is required than what modern microcontrollers (3V3, as used in ZIMO decoders) deliver.

Examples: LS Models BR 120, Sudexpress EuroDual BR 159

If a ZIMO sound decoder is to be installed (for better motor control, better sound...), the new adapter will help: it takes the place of the original intermediate circuit board in the locomotive and accepts a ZIMO PluX22 decoder (usually an MS450P22) on the other side.



ADAPLUMTC



Sudexpress EuroDual BR 159 with inserted ADAPLUMTC (visible below the decoder) and Sound-Decoder MS450P22.

Sound-Project (Henning) in the works

Modified Hardware and new Software-Versions
MXULFA *"something new"*

The most important news**: the previously announced callback** to improve the hardware for RailCom optimization **has been dropped**; the problem has been fixed through a software adjustment.

Hardware-Revision (F) of the newly built MXULFA (from April 2022), visually recognizable by the larger scroll wheel, which increases long-term reliability; In addition, a faster "track" output stage is installed, which will speed up (with suitable future SW in MXULFA and decoders) the sound loading of the MS decoder: 30 min instead of 50 min with a "full" project via track, still 5 min via SUSI.

Operations Mode (POM) programming is **primarily** used from SW version 0.84.18 for addressing, CV programming and reading, which is made possible by the RailCom optimization mentioned above. The outdated service mode is still available if needed.

A ZIMO user report:

0 scale - Conversion Experiences

***Lenz V160** conversion at the ZIMO booth in Gießen (10. - 11. June)*

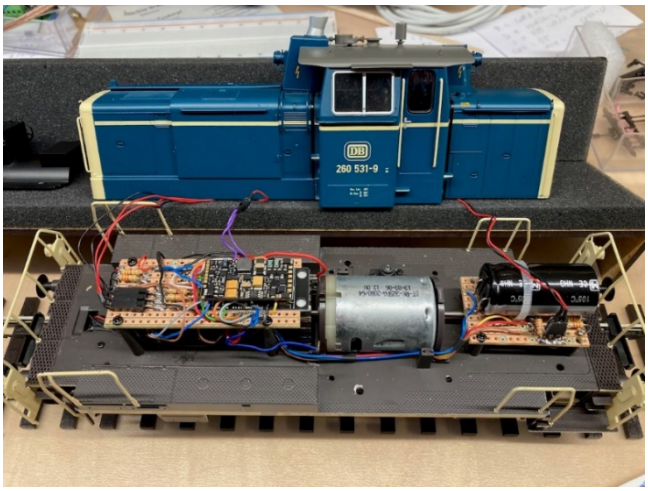
Mr. Dirk Nissen is a long time ZIMO customer; he got his start in garden railroading and is now working in O-scale. In a forum posts he writes:

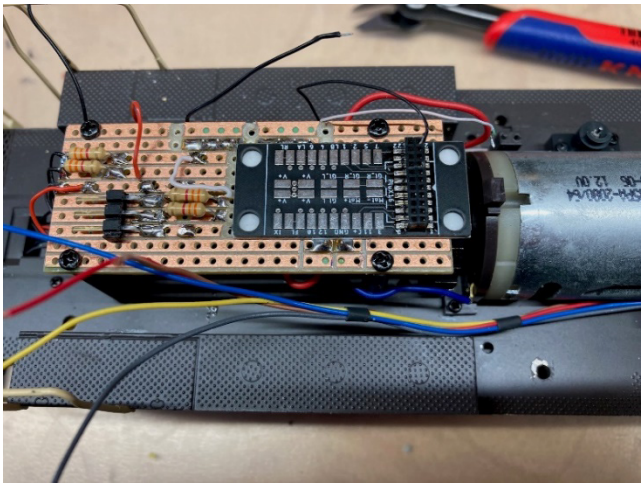
... here the basic question arises as to why everything needed in Lenz locomotives is there but no decoder interface (or, at the least, a terminal strip). From a historical point of view, it was definitely the right decision at the time. Interfaces are now available for the ESU Loksound L (which also supports the new ZIMO generation) or Plux-22/ MTC21 with an amplifier option for the use of H0 decoders. The locomotive manufacturer can then offer their own decoders, or sell it as a bundle with the locomotive. If you like an individualized approach, you can put the locomotive and decoder together according to your own taste. This is also an option for dealers/installers to get involved.

... communication between driving control in the decoder and sound is limited to the scope of the SUSI. I see far more options for an advanced decoder design, like that from ZIMO or ESU.

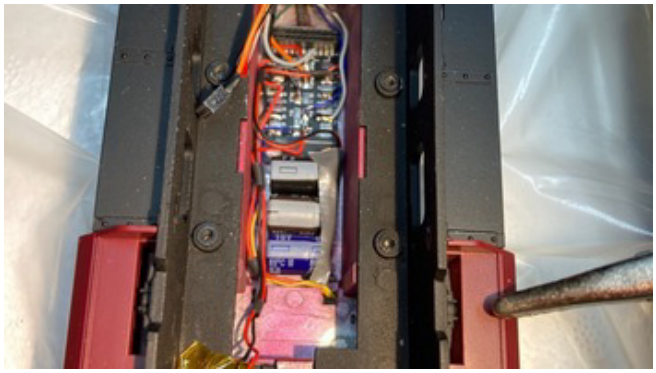
Links and pictures (with ZIMO Sound-Decoder MS450P22) courtesy of Dirk Nissen:

Lenz V60 https://forum.spur null-magazin.de/thread/30490-umbau-lenz-v60-1-serie-auf-pluxx22-und-zimo-dekoder-ms450p22/?postID=227938#post227938





Lenz Köf II https://forum.spurnull-magazin.de/thread/30455-lenz-köf-2-mit-zimo-dekoder/



Notes (Dirk Nissen): On the advice of Lenz, a 1,000 ohm resistor was inserted into the supply line to the front light and another soldered to the circuit board in the roof, bridging a break in the conductive track. Capacitors for energy storage were placed on the circuit board (the decoder has its own charging circuit). The light switches with F0 at the front and F1 at the back. The couplers are controlled via the coupler function (duty cycle, press on, break off).

Foam insulation was added between the speaker and the roof. The sound is freely available from Zimo and the functions have been adapted for the locomotive. Please let us know if you'd like a copy of the sound file.

New ZIMO employees *(since the last newsletter in September 2021)*

Katharina Hladik

Documentation, Assistant to Dr. Ziegler

Maurice Wiederin

Repairs, Testing

Elvira Kovacs-Pribicki

Housekeeping

Feras Abdul Salam

Manual soldering and series test work