



About the Prototype:

The NF4 (internal designation: GT8ND) is an **eight-axle, standard-gauge low-floor articulated tram operated by the Duisburger Verkehrsgesellschaft (DVG) in Duisburg, Germany**. These vehicles are approximately 34 meters long and 2.3 meters wide and belong to the Flexity Classic family manufactured by Alstom in Bautzen, Saxony.

The bidirectional NF4 tram is based on the M8D low-floor trams used in Essen and Mülheim. The overall vehicle concept and design remain largely unchanged. However, the Duisburg version features five doors per side instead of three and is approximately 4 meters longer.

The first two prototype vehicles, numbered 2001 and 2002, were delivered in 2020 and underwent extensive testing. Delivery of the production vehicles, numbered 2003 to 2054, began in 2022.

In April 2023, approval for passenger service was granted. Initially, the NF4 vehicles were primarily deployed on route 903. Following the completion of the necessary infrastructure modifications, the new trams have also been operating on route 901 since August 2023.

About the Model:

The **Duisburg NF4 models** were developed from Halling's existing Flexity Classic range. The front and rear modules were produced using completely new injection-molded tooling.

Both the appearance and the technology of the models have been extensively upgraded. The bodies and roofs have been fully decorated using state-of-the-art UV printing and pad-printing techniques to accurately reproduce the prototype. The interiors have been produced in multi-color 3D printing.

The **whisper-quiet powered models** feature **two completely maintenance-free ALX coreless motor bogies** located in the center module, as well as **interior passenger compartment lighting**. Due to space limitations, a modified six-pin digital interface according to NEM651 has been selected (see the Digitalization section for details). This allows the decoder to be concealed beneath the seating unit of the center module, leaving no visible wiring inside the passenger compartment.

To **open the model**, for example to install passengers or apply the window decals, please observe the following instructions: Each body section is attached to the chassis by two or three screws. **Please remove and work on only ONE module at a time. Do not completely disassemble the vehicle.** Loosen the screws only as far as necessary to remove the body shell. Unlike earlier Flexity Classic versions, the seating units are secured only by the screws and are no longer clipped separately to the chassis. The screws keep the seating units in position. When reassembling, ensure the seating units are correctly positioned and, on powered models, take care not to trap the wiring beneath the seats or damage the interior lighting.

Digital Installation:

The model can be equipped with a standard **6-pin NEM651 decoder** (without wiring harness), provided the following instructions are carefully observed:

PLEASE READ THIS SECTION COMPLETELY BEFORE PROCEEDING!

Preliminary Note: To allow the factory-installed interior lighting to operate in both analog and digital modes **without requiring any modifications by the user**, we have made changes to both the interface and the dummy plug (see Figure 1).

Pin 6 has been removed from the dummy plug. Pins 5 and 6 on the interface have been connected together.

For analog operation, please use only the supplied dummy plug and ensure it is installed in the correct orientation. Reversing the dummy plug will cause a short circuit.

Please test your model in analog operation **before** installing a decoder. This will greatly assist in troubleshooting should any issues arise later.

Likewise, please test your decoder in another proven vehicle or on a decoder test bench before installation.

The decoder interface is located in the center module. Only the center module needs to be disassembled for decoder installation.

Installation Procedure: Remove the body shell of the center module as described above, but in this case remove the screws completely (see Figure 2). Carefully fold the interior lighting assembly slightly upward. Then gently lift the seating unit upward on the left side and guide it forward underneath the supports of the interior lighting. This will provide access to the circuit board (see Figure 3).

Important: The space between the bogies is extremely limited. Carefully remove the dummy plug by separating the double-sided adhesive tape underneath it (see Figure 4). Compare the length of your decoder pins with those of the supplied dummy plug. If necessary, carefully shorten the decoder pins using side cutters until the decoder can be fully inserted into the plastic socket of our interface board (see Figure 5). This ensures that neither wires, decoder, nor interface board can come into contact with the worm gears during operation.

Install the NEM651 decoder in place of the dummy plug and test the vehicle before reinstalling the seating unit.

Pay careful attention to decoder orientation: Pin 1 of the decoder (marked on most decoders; see decoder instructions) must align with Pin 1 on our interface board (marked "1").

Alternatively, you can orient the decoder so that the solder joints of the plug connection on both the decoder and the interface board are located on the same side (facing upward).

After successful testing, secure the decoder and interface board in the center of the chassis using the previously removed adhesive tape. Ensure that no wires can come into contact with moving parts (see Figure 6).

When reassembling the model, make sure that no wires are trapped beneath the seating units and that the bogies remain free to move. Reinstall the interior lighting in its original position and carefully refit the body shell.

After installation, the passenger compartment lighting can be switched on and off using function F0 and operates independently of the direction of travel.

Recommended Decoders: ZIMO MN170N or ESU 59827

When using ESU LokPilot 5 decoders in combination with any of our ALX drive systems, please refer to Chapter 11.1.4 "Automatic Motor Tuning" in the ESU decoder manual.

Only after properly tuning the ESU decoder to our coreless motors will you be able to enjoy the model's optimum running characteristics.

Window Decals:

The models are supplied with a set of interior window decals. The set includes various destination displays and route numbers.

The correct arrangement of the pictograms in the windows can be found in the accompanying illustration in Figure 7. The positioning of the destination displays at the front and on the side of the center module is shown in Figure 8.

Carefully cut out the decals using a hobby knife, moisten them with water, and position them from the inside at the indicated locations before gently pressing them into place.

Please also refer to our detailed decal application guide:

<https://www.halling.at/documents//Tutorial---UV-Decals.pdf>

We wish you many hours of enjoyment and smooth operation with your new Duisburg NF4 trams!

For better readability and higher-resolution images, you can also find these instructions on our website www.halling.at under the "Downloads" tab in the "Product Information" section.

<https://www.halling.at/Beipack-Infos.html>

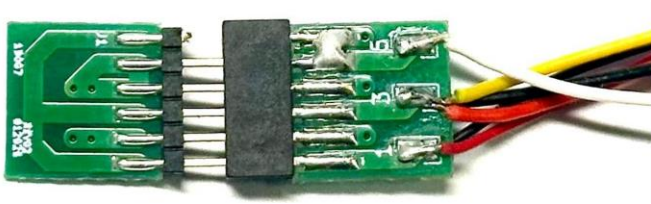


Figure 1: Modified interface and jumper plug



Figure 2: Disassembled vehicle body for decoder installation

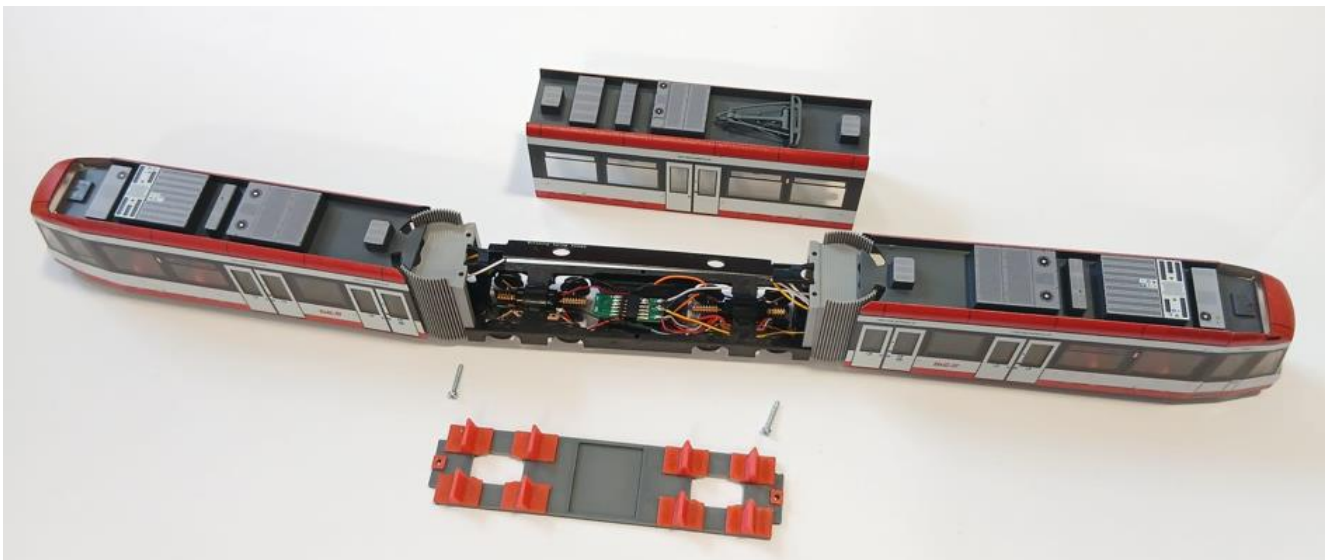


Figure 3: Removed seat panel

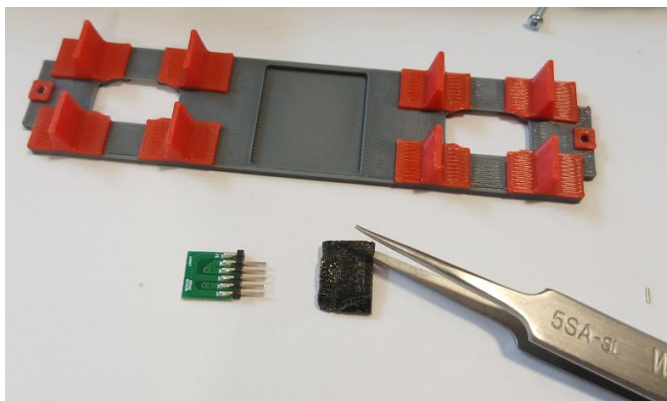


Figure 4: Jumper plug

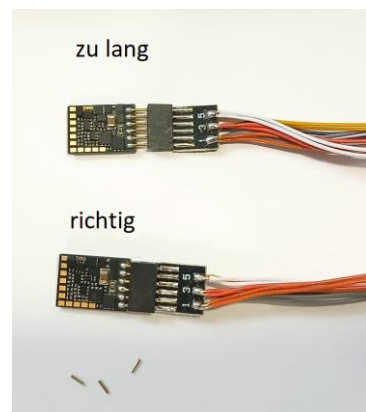


Figure 5: Decoder pins

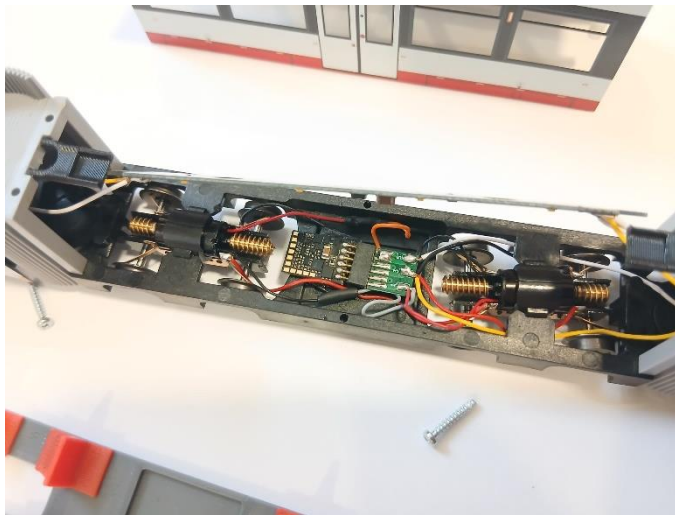


Figure 6: Organized cable clutter

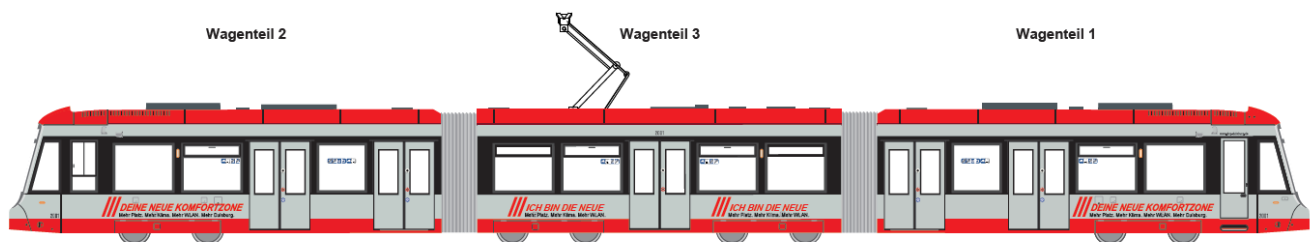


Figure 7: Arrangement of the pictograms in the windows



Figure 8: Position of line and destination signs

Made in Austria!

Achtung! Verkleinertes Modell für erwachsene Sammler von mindestens 14 Jahren. Kein Spielzeug. Außer Reichweite von KINDERN aufbewahren! Attention! Scale model for adult collectors, of at least 14 years of age. Not a toy. Keep out of reach of CHILDREN! Danger! Modèle réduit pour les collectionneurs adultes, d'au moins 14 ans. Ceci n'est pas un jouet. Tenir hors de portée des ENFANTS! Attention! Risque de blessures en cas de mauvaise manipulation. Méfiez-vous des arêtes vives! Attenzione! Pericolo di lesioni, se gestita in modo improprio. Attenzione ai bordi taglienti! Questo modello non è un giocattolo! Attenzione! Questa lista dei modelli non è un giocattolo! Pericolo di lesioni, se gestita in modo improprio. Attenzione ai bordi taglienti! Alla fine della sua vita inutile riciclare questo prodotto in un punto di raccolta per apparecchiature elettroniche. ¡Atención! Esta lista de modelos NO ES UN JUGUETE! Peligro de lesiones si se maneja de manera inadecuada. Tenga cuidado con los bordes afilados! Al final de su vida útil reciclar este producto a un punto de recogida para equipos electrónicos. Pozor! Tento seznam modelu není hračka! Nebezpečí zranění při nesprávném zacházení. Dejte si pozor na ostré hrany! Na konci své životnosti recyklovat tento výrobek na sběrném místě pro elektronické zařízení.

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