



**Digital Decoder
for AZL SD40-2, SD40T-2
Diesel Locomotives**



User's Manual

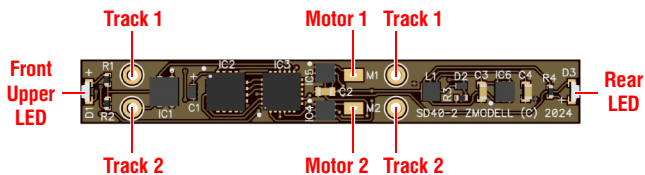
Art. No: ZDL-AZL-SD40-2

Suitable for:
AZL 641xx (SD40T-2), 642xx (SD40-2)

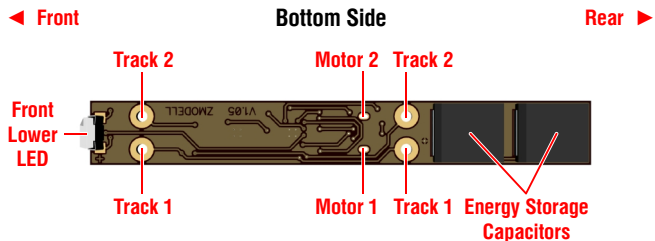
Ver 1.05

Overview

Top Side



Bottom Side



Package contents

- 1x ZDL-AZL-SD40-2 digital decoder
- 1x User's Manual

Technical data

Operating mode: DCC, MM, SelecTRIX 1, SelecTRIX 2, DC Analog

Max. voltage: 14 V in digital mode, 12 V in analog mode

Power buffer: Integrated highly efficient 940 μF (2x 470 μF) energy storage module with thermal and overvoltage protection

Functions

F0 – Directionally controlled headlights

F1 – Dimming function (brightness of headlights reduced by 50%)

F2 – Shunting mode (maximal speed reduced by 50%, short acceleration and deceleration time)

Default address: 3 (DCC), 01 (SelecTRIX)

Installation

1. Prior to installing the digital decoder, make sure your locomotive runs perfectly in analog mode without jerks and stalls.

2. Separate the locomotive housing and the chassis by pulling the body upwards. Perform this step carefully in order not to damage separately attached parts on the housing like handrails, window hoods etc.
3. Unscrew 4 screws retaining the stock circuit board and remove it from the chassis. Keep the screws in the safe place.
4. Install the digital decoder onto the chassis and fix it with screws. Do not overtighten them in order not to damage the circuit board of the digital decoder. Make sure there is no short circuit between the motor and chassis outputs.
5. It is recommended to put the locomotive onto the programming track at this step and check if all functions work correctly (reading address, lights and motor).
6. If the previous step was successful, the locomotive now needs to be re-assembled completely. For this, carefully install the housing back onto the chassis and gently press on it until it sits on the chassis completely.
7. Put the locomotive onto the track. It is recommended to perform a break-in run at the full speed during 5-15 minutes in both directions.

Important: To achieve best driving performance, please always keep the wheelsets of the locomotive and tracks clean from dust, fiber and grease.

Programming

This digital decoder is based on Doehler & Haass® hardware and software technology. For detailed information about all available features and programming in all available modes (DCC, MM, SelecTRIX 1 and 2), please refer to the complete programming manual available on Doehler & Haass® official website: <https://doehler-haass.de>

- 1. DCC Address:** Default DCC address is 3. To change default address, desired value (1-127) should be written to CV1. Long addresses (0001-9999) available; they are defined by CV17 and CV18; also, CV29 bit 5 should be enabled. Please refer to the complete programming manual available on Doehler & Haass® official website.
- 2. Acceleration time:** The value of CV3 corresponds to the time in seconds from start to maximum speed (available range 0-255). Default value is 3.
- 3. Deceleration time:** The value of CV4 corresponds to the time in seconds from the maximum speed to stop (available range 0-255). Default value is 3.
- 4. Maximal speed:** To adjust maximal speed, change CV5 to desired value (range 0-127). Default value is 92.
- 5. Front lights control:** SD40-2 digital decoder is equipped with two front LEDs at both sides of the circuit board. The LED on the top side is intended for all SD40-2 variants with top headlights and disabled by default. To enable it, write 5 to CV33. Default value is 1 (only LED on the bottom side is active).
- 6. Decoder reset:** To reset decoder to the factory defaults, write 8 to CV8.

ATTENTION: This product is intended only to experienced users! Please perform all operations with all precautions that apply to work with ESD sensitive devices. This product is not suitable for children under 15 years. The functioning of every decoder is fully tested before delivery. Should nevertheless a failure occur, please contact the supplier where you purchased the decoder or directly the manufacturer. The warranty period is one year from the date of purchase. The manufacturer is not responsible for any damage to the train model and/or digital decoder caused by improper installation, assembly or disassembly of the model, as well as by exceeding the maximum allowed operating parameters.

IMPORTANT: Small cross screwdriver (Phillips PH0 or PH00) is required for installation of this digital decoder.

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