Digital Decoder for AZL SD50, SD60 and SD60M Diesel Locomotives

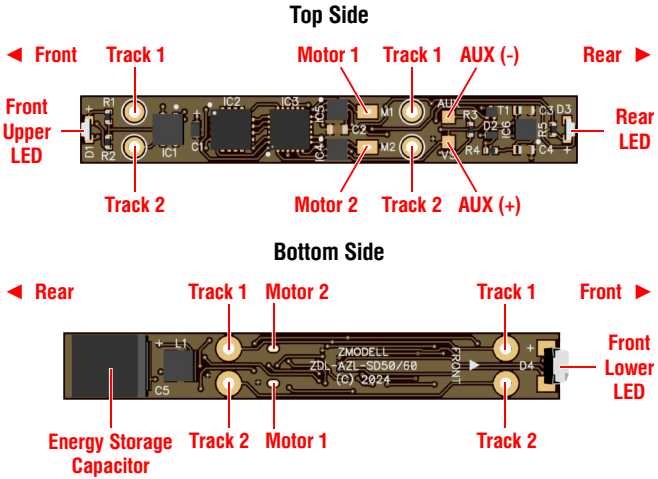
User's Manual

Art. No: ZDL-AZL-SD50/60

Suitable for:
AZL 650xx (SD50, SD60, SD60M)

Ver 1.05

Overview



Package contents

- **1x** ZDL-AZL-SD50/60 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 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)

F3 – AUX output

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.

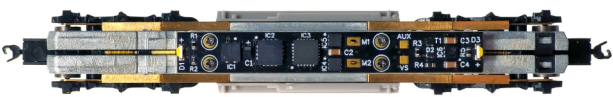
2. Separate the locomotive housing and the chassis by pulling the body upwards. Perform this step carefully in order not to damage separately attached parts on the housing like handrails, window hoods etc.

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.

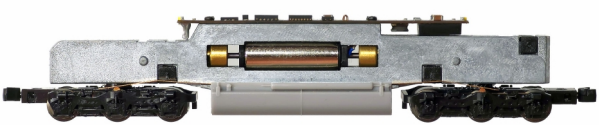
Digital decoder correctly installed onto the chassis should look like this:

Top View



◄ **Front** **Rear** ►

Side View



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).

Tip: In case of incorrect or unreliable reading of the address or adjusting decoder settings, please check if the wheelsets and the track are absolutely clean. It is also recommended to additionally clean the brass springs attached to the chassis and the tabs coming from the trucks. The brass springs can be further bent downwards to put more pressure on the tabs and provide a better electrical connection.

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.

Additional Functions

SD50/60 digital decoder features one auxiliary output with maximum load capability of 300 mA. This output is shunted with 4.7 kΩ resistor and allows direct connection of LEDs and other consumers. They should be connected to the corresponding pads on the circuit board marked with VS (+) and AUX (-).

It is recommended to use thin stranded flexible wire for this. Single-core enameled cables (magnet wire) are not recommended. The brightness of auxiliary output is adjustable (see §8 of the "Programming" section). In case of connecting consumers other than standard LEDs (for example, blinking LEDs), the brightness should be always set to the maximum level. Otherwise, such consumers may show malfunction.

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. Shunting speed: To adjust shunting speed, change CV61 to desired value (range 0-127). Default value is 63.

6. Front lights control: SD50/60 digital decoder is equipped with dual front LEDs at both sides of the circuit board. The top LED illuminates top headlights; the bottom LED is for nose lights and/or ditch lights. The required headlights configuration is adjusted using the CV33 setting:

CV33 Value	Headlights Configuration
0	No front headlights
1	Top LED only (default)
4	Bottom LED only
5	Both top and bottom LEDs

8. LED Brightness: The brightness of the lights can be adjusted. To change it, see the following table of decoder settings:

CV	Function	Range	Default
52	Brightness of the front top LED and rear LED	0-31	31
53	Brightness of all LEDs in dimming mode	0-31	10
54	Brightness of the front bottom LED	0-31	31
55	Brightness of the auxiliary output	0-31	31

9. 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.

Digital Decoder
for AZL SD50, SD60 and SD60M Diesel Locomotives

User's Manual
Ver 1.05

Art. No: ZDL-AZL-SD50/60

facebook.com/zmodelltrains
Email: zmodell@ukr.net

© Zmodell 2024
Made in Ukraine

American Z Line® is a product line from Rail Miniatures
c/o Ztrack Magazine Ltd., 6142 Northcliff Blvd., Dublin Ohio 43016, USA

Märklin® and SelecTRIX® are registered trademarks of Gebr. Märklin & Cie. GmbH, Postfach 860, DE-73008 Göppingen, Germany

Doehler & Haass® is a registered trademark of Doehler & Haass GmbH & Co. KG, DE-81249 Munich, Germany