



4-fold switch decoder

from the *Digital-Professional-Series* !

SA-DEC-4-DC-F Part-No.: 210212

>> finished module <<

Compatible to the DCC-Format:

(e.g. Lenz Digital Plus, Arnold-, Märklin-Digital-, Intellibox, TWIN-CENTER, Roco-Digital, EasyControl, ECoS, KeyCom-DC, Digitrax, DiCoStation, Zimo and others)
(switching via Lokmaus 2® and R3® is possible)

For the digital control of:

- ⇒ consumers up to 2 Ampere on each output
(e.g. illumination, switching track sections voltage free).
- ⇒ jammed turnout- and signal drives
(drives with integrated end switch).

This product is not a toy! Not suitable for children under 14 years of age!
The kit contains small parts, which should be kept away from children under 3!
Improper use will imply danger of injuring due to sharp edges and tips! Please store this instruction carefully.



yellow point



Introduction / Safety instruction:

You have purchased the 4-fold switch decoder **SA-DEC-4** for your model railway supplied within the assortment of Littfinski DatenTechnik (LDT).

We wish you having a good time using this product.

The **SA-DEC-4-DC** (receiver device is marked yellow) is suitable for the **DCC Data format**, used for instance at the systems of **Lenz-Digital Plus, Arnold-, Märklin-Digital-, Intellibox, TWIN-CENTER, Roco-Digital, EasyControl, ECoS, KeyCom-DC, Digitrax, DiCoStation** and **Zimo**.

The decoder **SA-DEC-4-DC** can not only switch turnouts via the **turnout addresses** but also responds to **loc-addresses**. Therefore is it possible to switch consumers with the keys **F1** to **F4** of the **Lokmaus 2®** or **R3®**.

The decoder **SA-DEC-4-DC** is **multi digital** and can be installed to the **Intellibox** and on the **TWIN-CENTER** without any problems.

The finished module comes with **24 month warranty**.

- Please read the following instructions carefully. Warranty will expire due to damages caused by disregarding the operating instructions. **LDT** will also be not liable for any consequential damages caused by improper use or installation.
- Also, note that electronic semiconductors are very sensitive to electrostatic discharges and can be destroyed by them. Therefore, discharge yourself before touching the modules on a grounded metal surface (e.g. heater, water pipe or protective earth connection) or work on a grounded electrostatic protection mat or with a wrist strap for electrostatic protection.
- We designed our devices for indoor use only.

Connecting the decoder to your digital model railway layout:

- **Attention:** Before starting the installation switch off the drive voltage by pushing the stop button or disconnect the main supply.

The decoder receives the **digital information** via the clamp **KL2**. Connect the clamp directly to the command station or to a booster assuring the supply of digital information free from any interference.

The DCC-Digital-Systems uses different color codes respectively indications for the two digital cables. Those markings are indicated next to the clamp **KL2**. These markings have not necessarily to be maintained correct as the decoder converts the signal automatically to be correct.

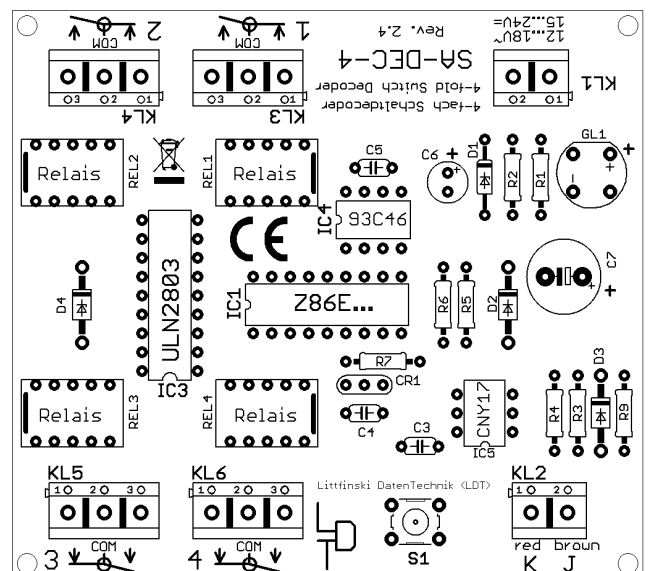
The decoder receives the **voltage-supply** via the two-pole clamp **KL1**. The voltage shall be in the range of 12 to 18V~ (alternating voltage output of a model railway transformer) or 15 to 24Volt = (direct voltage output of an insulated power supply unit).

Now connect the consumers (e.g. illumination, motors or turnout- and signal-coils with end-switch) to the outputs 1 to 4. The clamp marked '**COM**' is the common connection for the respective switch-over contact.

Programming the decoder address:

For programming the decoder address you can connect a consumer to the output 1. As it is possible to hear the switching of the bistable relay the connection of a consumer is not mandatory.

- Switch on the power supply of your model rail way.
- Adjust the **speed** of all connected speed controller to **zero**.
- Press the **programming key S1**.
- The relay connected to output 1 will now automatically switch-over every **1.5 seconds**. This indicates that the decoder is in the **programming mode**.
- Switch now one turnout of a **group of four** assigned to the decoder via the keyboard of the control unit or via a remote control unit. For programming the decoder address you can also release a turnout switch signal via a PC-software.



Remarks: The decoder addresses for magnet accessories are combined in groups of four. The address 1 to 4 build the first group. The address 5 to 8 build the second group etc. Each **SA-DEC-4** decoder can be assigned to any of these groups. Which of the 4 turnouts of a group will be activated for the addressing does not matter.

- If the decoder has recognized the assignment correctly the relay will move a little faster. Afterwards the movement slows down to the initial 1.5 seconds interval again.
- Leave the programming mode by depressing the programming key S1 again. The decoder address is now permanently stored but can be changed at any time by repeating the programming as described above.

- If you press the first key of the programmed group of keys or you send a switch signal for this address from a PC the addressed bistable relay should now switch the connected consumer on or off.

Switching consumers via loc-addresses (e.g. Lokmaus 2® or R3®):

The decoder **SA-DEC-4-DC** makes it possible to switch consumer via **loc-addresses**. For example switching with the **functional keys F1 to F4** of the **Lokmaus 2®** or **R3®**.

The **function key F1** will switch the **consumer at the output 1** and the **key F2** will switch the **consumer at the output 2** etc.

Each **stroke on a function key** will **switch-over the respective relay**. Therefore can the connected consumer switched on and off.

For programming the decoder address you can connect a consumer to the output 1. As it is possible to hear the switching of the bistable relay the connection of a consumer is not mandatory.

- Switch the power supply of your model rail way on.
- Adjust the **speed** of all connected speed controller to **zero**.
- Press the programming key S1.
- The relay at the output 1 shall move now automatically every 1.5 seconds. This indicates that the decoder is in the programming mode.
- Adjust now on one of the Lokmauses the required address and **turn the speed adjusting dial** off from the center position. If the decoder has recognized the assignment correctly the connected **turnout drive** will **move** now a little **faster**. The decoder **SA-DEC-4-DC** will accept **loc-addresses** between **1 and 99**.
- Adjust the **speed** now to **zero** again. The relay at output 1 will switch now a little slower.

- Press the **programming key S1** again for **leaving the programming mode**.
- With **each stroke of the functional key F1** you can switch the **connected consumer at the output 1** on or off. If there are consumers connected to the output 2 to 4 of the decoder **SA-DEC-4-DC** you can shift the respective registered turnouts with the programmed loc-addresses with each stroke of the function keys F2 to F4.

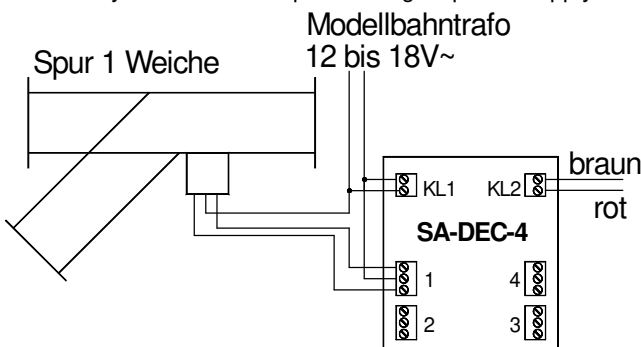
Please attend to the following:

- All 4 **outputs** can switch consumers with up to **2 Ampere** each.

Decoder application:

Besides the switching of illumination and motors there is an excellent application for the decoder **SA-DEC-4** of digital shifting of jammed turnouts with end switch.

As an advantage large current consuming drives will not unnecessary overload the expensive digital power supply.



Feed the **SA-DEC-4** via clamp **KL1** with **AC** from the **model railway transformer**. Further connect one ac-cable of the transformer with clamp **'L'** on the turnout drive. Connect the second cable of the transformer with the clamp marked **'COM'** on the respective decoder output.

Now, connect the two remaining clamps of the decoder output with the outputs **1** and **2** of the turnout drive.

Further application examples can be found in the **Internet** on our **Web-Site** (www.ldt-infocenter.com) at the section **downloads/sample connections**.

A solid **low cost housing** is available for the decoder **SA-DEC-4-DC** (Part Number **LDT-01**). Please consult our Web-Site for further details.

Trouble shooting:

What to do if something is not working as described above?

If you have purchased the decoder as a kit, please carefully check all parts and soldered joints.

Here some possible functional errors and possible solutions:

1. During **programming of the decoder addresses** the relay on output moves within 1.5 seconds, but does not **confirm** the programming with **faster movement** by **depressing any key**.

- **Interfered digital information** at **KL2** respectively **lost of voltage** at the **tracks!** Connect the decoder directly with cables to the digital control unit or to the booster instead to the tracks.
- Eventually the **clamps** have been **tightened to strong** and therefore the clamps got **loose at the soldering** to the pc board. **Check the soldering connection of the clamps** at the lower side of the pc-board and re-solder them if required.
- **For kits:** Is IC4 and IC5 correct inserted into the socket? Value of R6 actually 220kOhm or mixed up with R5 18kOhm?

2. The turnout connected to output 1 will move always at a **faster sequence** after activating the programming key S1.

- Start **programming** the switch decoder SA-DEC-4-DC **immediately after switching-on** the digital central unit before any loc is traveling on the track.

- Perform a **RESET** of the digital central unit. All stored data will be preserved but the **address-repeating-memory** will be **deleted**. For **Intellibox** and **TWIN-CENTER** please switch-on the unit and press the keys **GO** and **STOP** simultaneous until the report "reset" can be read at the display.

Further products within the *Digital-Professional-Series*:

S-DEC-4

4-fold turnout decoder for 4 magnet accessories with free programmable decoder addresses and possible external power supply.

M-DEC

4-fold decoder for motor driven turnouts. For motors up to 1A. With free programmable decoder addresses. Drives can be connected directly with the decoder output.

LS-DEC

Light signal decoder for up to 4 LED train signals. Signal aspects will be originally dimmed up and down and positioned directly via the decoder address.

RM-GB-8-N

8-fold feedback module with integrated occupancy detectors for the s88 feedback bus.

Made in Europe by
Littfinski DatenTechnik (LDT)
 Bühler electronic GmbH
 Ulmenstraße 43
 15370 Fredersdorf / Germany
 Phone: +49 (0) 33439 / 867-0
 Internet: www.ldt-infocenter.com

Subject to technical changes and errors. © 09/2022 by LDT
 Arnold, Digitrax, Lenz, Märklin, Motorola, Roco and Zimo are registered trade marks.