



# 4-fold decoder for single coil turnouts

from the *Digital-Professional-Series* !

**1-DEC-DC-F Part-No.: 110412**

>> finished module <<

**Compatible to the DCC-Format:**

Turnouts can also be controlled via loc-addresses  
(e.g. Lokmaus 2® and R3®).

## For the digital control of:

- ⇒ up to **four LGB turnout drives**.  
(LGB Part No. EPL 12010)
- ⇒ up to **four PIKO G turnout drives**.  
(PIKO Part No. 35271)
- ⇒ up to **four KATO UNITRACK, TOMIX and ROKUHAN turnout drives**.
- ⇒ **switching current up to 1 Ampere on each output**.

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 turnout decoder **1-DEC-DC** for your model railway a kit or as finished module supplied within the assortment of Littfinski DatenTechnik (LDT).

We wish you having a good time using this product.

The **1-DEC-DC decoder** (receiver device is marked with a yellow dot) is suitable for the **DCC-Format** as used by the systems of **Lenz-Digital Plus, Arnold-, Märklin-Digital, Intellibox, TWIN-CENTER, Roco-Digital, EasyControl, ECoS, KeyCom-DC, Digitrax, DiCoStation** and **Zimo**.

The decoder **1-DEC-DC** can control the turnouts either via **turnout-addresses** or via **loc-addresses**. Therefore is it possible to switch the turnouts for example by using the push buttons **F1** to **F4** of the **Lokmaus 2®** or **R3®**.

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 not be 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 any installation switch off all power supply to the digital layout by pushing the stop button or disconnect all main supply to the transformers.

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

DCC-Digital systems are using different cable colors respectively different designations for the two digital cables. Common identification can be found next to clamp **KL2**. It is not necessarily required to follow those markings because the decoder will automatically identify the correct signal.

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).

## Connecting turnout drives:

The Decoder **1-DEC-DC** is suitable for **digital switching of single coil turnout drives**. Those drives contain **two connection wires**. This wires shall be **directly connected** with one of the **output clamps KL6 to KL9**.

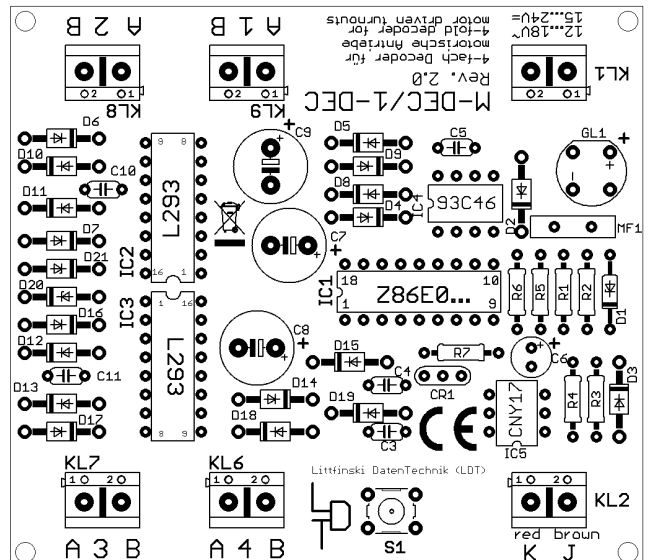
**ROKUHAN turnout drives shall be supplied with a voltage of 10 to 12 Volt only**. For **reducing the voltage** is it required to apply **two 9,1Volt Z-Diodes on each output**. The **connection sample 1368** to be downloaded from our **internet site** from the section "Sample Connection" will show the wiring.

The **1-DEC-DC** can switch all **KATO UNITRACK** turnouts with the **exception** of the **Double Crossover Track 20-210**. This unit contains **several drive-coils** which need **together more than 1 Ampere switch-current**.

## Programming the decoder address:

To program the decoder address a turnout drive has to be connected to the output **1** (clamp **KL9**) of the decoder.

- Switch on the power supply of your model railway.
- Press the **programming key S1**. Do not touch the integrated circuits of the pc-board because any electrostatic discharge can destroy the IC's.



- The turnout drive connected to output 1 will now move every **1.5 seconds**. This indicates that the decoder is in the **programming mode**.

## Switching turnouts via turnout addresses:

- Press now one key of a key group to be assigned to the decoder. For programming the decoder address you can also release a turnout switch signal via a personal computer over the model railway software.

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

- If the decoder has recognized the assignment correctly the connected turnout will move a little faster. Afterwards the movement slows down to the initial 1.5 seconds again. In case the decoder will not recognize the address it could be that the two digital information connections (clamp 2) are wrong way connected. For testing this, switch the power supply off, exchange the connection on KL2 and start addressing again.
- Leave the programming mode by pressing the programming key S1 again. The decoder address is now permanently stored but it can be changed at any time by repeating the programming as described above.
- If you press now the first key of the programmed group of keys or you send a switch signal for this turnout from a PC the addressed turnout drive should move into the called direction (round or straight) until end stop. In case the movement goes in the wrong direction please exchange the turnout connection.

### Switching turnouts via loc-addresses (Lokmaus 2® or R3®):

The decoder **1-DEC-DC** can also control turnouts via **loc-addresses**. For example with the functional keys **F1** to **F4** of the **Lokmaus 2®** or **R3®**.

The **turnout connected to output 1** will be switched with the **functional key F1** and the **turnout connected to output 2** with **key F2** etc.

**Each pressing of a functional key** will release a movement of the **respective turnout** from turning to straight or vice versa.

To program the loc-addresses a turnout drive has to be connected to the output **1** (clamp **KL9**) of the decoder.

- Switch on the **power supply** of your model railway.
- Adjust the **speed** of all connected speed controller respectively all lokmauses to **zero** (center position of the adjusting dial).
- Press the **programming key S1**. Do not touch the integrated circuits of the pc-board because any electrostatic discharge can destroy the IC's.
- The turnout drive connected to output 1 will now move every **1.5 seconds**. This indicates that the decoder is in the **programming mode**.
- Now adjust the required address on one Lokmaus and **turn the speed control dial** away from the center position. If the decoder has recognized the assignment correctly the connected **turnout** will move a little **faster**. The decoder **1-DEC-DC** will accept **loc-addresses between 1 and 99**.
- Adjust the **speed control to zero** again. The movement of the connected turnout will slow down to the initial 1.5 seconds.
- **Leave the programming mode** by pressing the **programming key S1** again.
- If you press the **functional key F1** the **turnout connected to output 1** will be switched over by each key stroke. In case some further turnouts are connected to output 2 to 4 of the decoder **1-DEC-DC** this turnouts will be switched with the functional keys **F2** to **F4** with each respective key stroke.

### Attention:

- Each of the 4 **decoder outputs** can **switch 1 Ampere max**. For securing the decoder components and the connected **turnout drives** the decoder **1-DEC-DC** includes an **overload fuse**. This is an automatic fuse which will switch back to normal operation with a few seconds delay as soon as the current load will be below the maximum value.

### Accessory:

For the assembly of the **1-DEC-DC** below your layout base plate is our assembly set **MON-Set** recommended. For the ready assembled kits and the finished modules from version 2.0 we offer a suitable case under the order code **LDT-01** a suitable case with the dimension of **93x80x32mm** within our program.

If you require **for an outdoor application** a **suitable splash-water protected case** for the **4-fold turnout decoder 1-DEC-DC** from **version 2** we can offer you a **suitable case** of the dimension of **125x85x55mm** under the order code **G-2-DEC**.

You will receive this case together with a splash-water protected **cable inlet**.

### Trouble shooting:

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

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

Here some possible functional errors and possible solutions:

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

- **Change cable** connections at **KL2**.
- **Interfered digital information** at **KL2** respectively **larger 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.
- **For kits:** Is IC5 correct inserted into the socket? Has resistor R6 actually 220kOhm or has this resistor been mixed-up with the 18kOhm resistor R5?
- 2. The **programming of the decoder address** functions as described, nevertheless the **connected consumers can not be activated**.
- **Interfered digital information** on **KL2** respectively **larger lost of voltage** at the **tracks** result to unsafe data transfer! Connect the decoder directly with cables to the command station or the booster.
- **For kits:** Is IC4 correct inserted into the socket?

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](http://www.ldt-infocenter.com)