Littfinski **D**aten**T**echnik (**LDT**)

Operating Instruction

Digital Accessory Decoder for 4 electrical consumers

from the *Digital*

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

or

SA-DEC-4-DC-F Part-No.: 210312

(With external power supply)

>> assembled module <<

100% compatible with the Märklin-Motorola or DCC digital data format:

(e.g. **Märklin-Digital**~, **Intellibox** , **Lenz Digital plus, Twin-Center, Digitrax** etc.)

For digital control of:

⇒ **electrical consumers with 4 Ampere on each output**
(e.g. lights, disconnect tracks from voltage)

⇒ **tight solenoid points or signals**
(e.g. points with integrated final cutoff)

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 years of age! Improper use will imply danger or injuring due to sharp edges and tips! Please carefully store this instruction.

CE

Multi-Digital

Red point: Märklin-Motorola
Blue point: DCC

Introduction / Safety Information:

Thank your for buying the digital decoder **SA-DEC-4** for your model railway. The **SA-DEC-4** is a high quality product, which is supplied within the ***Digital-Professional-Series*** of **L**ittfinski **D**aten**T**echnik (**LDT**).

All decoder from the ***Digital-Professional-Series*** and can easily be installed on digital railway.

The **main IC** on the decoder is marked with a **color** to distinguish between the two different digital systems which are supported by the **SA-DEC-4**.

The color "**red**" means 100% compatible with **Märklin-Digital~** or **Märklin-Motorola** accordingly.

In case of a "**blue**" color the **SA-DEC 4** can be used for **NMRA DCC digital systems** like **Arnold-Digital, Lenz-Digital Plus, Roco-Digital** (for KEYBOARD only. LOKMOUSE not supported), **Twin Center, Digitrax, Zimo** and **Märklin Digital=**.

The **SA-DEC-4** decoder is prepared for the **Intellibox** as well (**Multi-Digital**).

The assembled modules come with a **2-years 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.

Connecting the decoder with your digital controlled model railway:

- **Attention: Before installation, disconnect you model railway digital unit and your PC from current.**

Voltage and **digital information** is being supplied through the 2-pole connection clamp. Connect the **SA-DEC-4** either with the track or better directly with the digital control unit, as it will get its digital information without any interference then.

Pay attention to the color/letter marks at clamp **KL2**.
The colors "**black/schwarz**" and "**red/rot**" are used for **Arnold-Digital (old)** and **Märklin-Digital=**.

Other systems use the letters "**J**" and "**K**".

If you use the decoder for **Märklin-Digital~** or **Märklin-Motorola** systems, the colors "**red/rot**" and "**brown/braun**" are relevant.

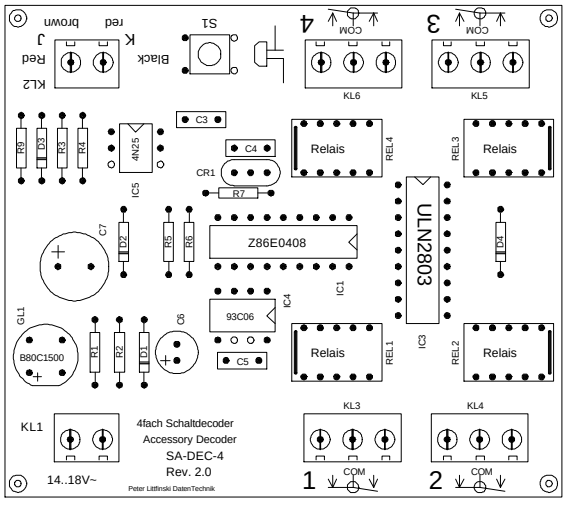
Power will be **supplied** through clamp **KL1** to the decoder (middle and left clamp which is marked with ~). Voltage in the range of 14 to 18V~ is allowed (alternate current form a model railway transformer).

If you do not want to supply the **SA-DEC-4** with external power, both clamps **KL1** and **KL2** can be connected with two cables. The decoder will be supplied with power through the **digital system** then.

Now connect the electrical consumers (e.g. lights, motors or points or signals) with the 3-pole output clamps NO. 1 to 4 as marked on the decoder. The contact marked with **COM** is the common output clamp of the BI-stable relay.

Programming the decoder address:

To program the decoder address there should be an electrical consumer connected to the fist output of the decoder. As one can here the relay switching, this is not absolutely necessary.



- Connect your digital control unit with power (by pressing the "GO" key)
- Press the programming key once. Do not touch the ICs on the decoder, as there is the risk of destroying it by electrostatic discharge.
- The relay on output one will switch automatically every 1,5 seconds. The decoder is in the "programming mode" now.
- Press a key on your Keyboard to assign the 4 keys of that group. You can also use your switchboard or your PC, which must be connected by an Interface, to assign a switch task.

Remark: The 16 keys on a Keyboard are divided into 4 groups with 4 keys. Key 1 to 4 build the first group, key 5 to 8 the second and so on. Each decoder can be assigned to any of these 4 groups.

- If the decoder has recognized the assignment correctly, the relay will switch a bit faster for a while. Afterwards it will switch every 1,5 seconds again.
  If this will not happen, change the connecting cables red and green on the decoder output #2.
- Leave the "programming mode" by pressing the programming key on the decoder again. The decoder address is saved permanently now but can be changed by repeating the programming as described above.
- If you press the first red key on the programmed group of keys now, the connected electrical consumer will switch.

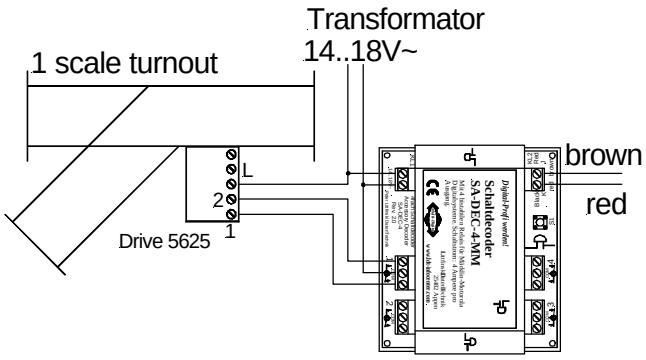
Please notice the following:

- All **4** outputs of the **SA-DEC-4** can switch voltage up to **1 Ampere**.

Examples how to use the SA-DEC-4:

Following schemes provide some examples of the multipurpose of the **SA-DEC-4**.
Beside the typically use of switching lights etc., the decoder can also be used for digital switching of **Märklin track 1** devices (e.g. 5625), which normally consume much electricity.
As an advantage the **SA-DEC-4** will feed these devices by external power and digital current can be saved.

The following scheme shows the connection.



Feed the **SA-DEC-4** via **KL1** witch **AC** from the **model railway transformer**. Further connect one cable of the transformer with clamp "**L**" on the point device. Connect the second cable with the clamp marked with **COM** on the decoder output.

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

Further examples can be found on the **INTERNET (www.ldt-infocenter.com)** in the **download section.**

A **solid** and **low cost housing** is also available for the **SA-DEC-4**. Please consult our INTERNET site for more details.

Trouble shooting:

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

If you have purchase the **SA-DEC-4** as a kit, please carefully check all parts and all soldered joints.

Here some possible functional errors and its possible solutions:

1. During **programming** of the **decoder addresses** the connected points switch every 1,5 seconds but do not confirm programming by faster switching then.
   - Changes **cables** at **KL2**.
   - **Interfered digital information** on **KL2** or **lost of voltage** on the **tracks** or the **cables!** Connect the decoder directly with the digital control unit or the booster. Increase the cross section of very long connecting cables.
   - **For kits:** Is IC5 connected properly? Resistor R6 must have 220kOhm. It could have been mixed up with R5 (18kOhm) or R7 (1Mohm)?!

2. The **programming** seems to be **successful**, but **points cannot be switched**.
   - **Interfered digital information** on **KL2** or **lost of voltage** on the **tracks** or the cables! Connect the decoder directly with the digital control unit or the booster. Increase the cross section of very long connecting cables.
   - **For kits:** Is IC4 connected properly?

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

S-DEC-4
Digital switch decoder for up to 4 points with self-learning decoder addresses and separate power supply.

M-DEC
Digital turnout decoder for up to 4 motor points. For motors with current of max. 1A. With self-learning decoder addresses. Motors can be connected directly with the decoder.

LS-DEC
Light signal decoder for up to 4 LED train signals. For DB, SBB and NS.

ZBM
4-fold train influence module to be combined with **LDT** light signal decoder **LS-DEC**.

RM-DEC-88 / RM-DEC-88-Opto
Digital feedback module with 16 inputs (also available as OPTO version) for the s88 feedback bus for connection with the **Memory** and **Interface (Märklin / Arnold)** or **Intellibox**, **Twin Center**.

RM-GB-8
Digital feedback module with integrated detection of up to 8 occupied tracks for the s88 feedback bus.

All products are supplied as **assembled** or **cased modules** and as **kits**.

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