



# 4-fold turnout decoder

from the *Digital-Professional-Series* !

**QS-DEC-II-F** Part-No.: **810712**

>> finished module <<

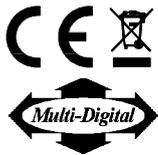
**Compatible to Märklin-Motorola Format:**

(e.g. Märklin-Digital~, Märklin Systems, Intellibox, EasyControl, ECoS, KeyCom-MM, DiCoStation)

For digital control of:

- ⇒ up to 4 twin-coil magnet accessories (e.g. turnouts or signals of M-, K- and C-rails)
- ⇒ up to 8 single-coil magnet accessories (e.g. uncoupling tracks of M-, K- and C-rails)
- ⇒ up to 4 permanent power switch units [DSU] (e.g. road-/house-illumination and turnout lights)

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.



## Introduction/Safety instruction:

You have purchased the 4-fold turnout decoder **QS-DEC-II** for your model railway as a kit or as finished module.

The QS-DEC-II is a high quality product that is supplied within the *Digital-Professional-Series* of Littfinski DatenTechnik (LDT).

We wish you having a good time using this product.

The turnout decoder **QS-DEC-II** of the *Digital-Professional-Series* can be easily operated on your digital model rail way.

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.

## Connecting the decoder to your digital model railway layout:

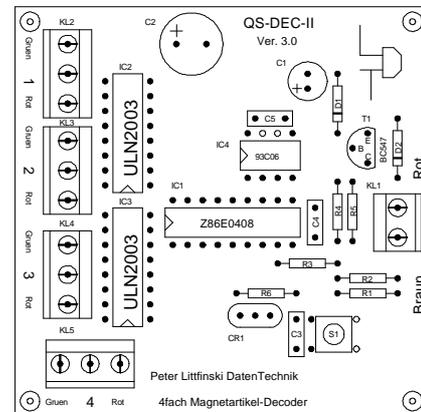
- **Attention:** Before starting the installation switch off the drive voltage by pushing the stop button from the command station or disconnect the main supply.

The decoder receives the **power supply** and the required **digital information** via the **two pole** clamp (KL1). Connect the clamp with a rail or even better connect the clamp directly to the command station (e.g. Control Unit or Intellibox) assuring the supply of digital information free from any interference.

The cable (red and brown according to Märklin color code) shall be connected as per marking on the pc-board next to the clamp.

Now connect turnouts, signals, uncoupling tracks or the permanent power switch unit [DSU] to the 3-pole clamp marked 1 to 4.

The yellow common conductor has to be connected always to the middle clamp of the relevant decoder output clamp. The two remaining blue cables of a turnout marked with a red plug (turnout round) and a green plug (turnout straight) shall be connected to the clamps as marked accordingly.



## Programming the decoder address:

To program the decoder address a turnout has to be connected to the output 1 of the decoder.

- Switch on the power supply on the central unit of your model rail way with Go.
- Press the programming key S1. Do not touch the integrated circuits of the pc-board because any electrostatic discharge can destroy the ICs.

- The turnout connected to output 1 will move now automatically every 1,5 seconds. This indicates that the decoder is in the programming mode.
- Press now one push button of the **group of four** assigned to the decoder on the Märklin-KEYBOARD or on a SWITCHBOARD. For programming the decoder address you can also release a turnout switch signal via a personal computer which is connected to an INTERFACE.

### Remarks:

The 16 pair of keys on each KEYBOARD are divided into 4 groups with 4 keys each. Key 1 to 4 builds the first group, key 5 to 8 the second etc. Each decoder can be assigned to any of these groups. Which key of the wanted block has been pressed does not matter. The decoder is programming generally the complete block of four.

- 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.
- 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 the red first key of the programmed group of keys the addressed turnout should move into the called direction either into round or by pressing the green key into straight position. In case the movement goes the wrong way please exchange the two turnout connection cables at the ,G'reen (straight) and ,R'ed (round) marked connection clamps of the decoder output 1.

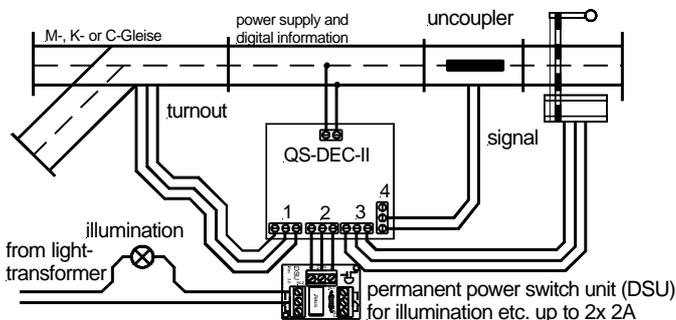
## Please attend to the following:

- The end switches of the turnout drives on **K- and C-tracks** can initiate considerable electromagnetic interference. In case this interference disturbs the function of your decoder please push about 10 ferrite pearls onto the yellow wire of the turnout. These ferrite pearls are available at most electronic component dealers or directly from us under the order description 'FP' (100 pieces in a bag).
- **Turnout illumination:** The illumination of the M-Track turnouts is connected to the turnout drive. To save expensive digital current Märklin recommends the supply of the turnout illumination separate from the drive current. The decoder **QS-DEC-II** considers this requirement and provides no current to the turnout lights. If you want to use separate current supply to the turnout illumination please proceed as follows: cut the yellow cable between turnout coil and turnout illumination. Connect a yellow cable between turnout light and transformer light output. For more realistic impression you can switch the turnout illumination by using our **permanent power switch unit [DSU]** or our switch decoder **SA-DEC-4-MM**.
- The outputs 1,2 and 3 are **amplified** and are able to switch a load up to 1 Amp. For example it is possible to switch 2 turnouts or 1 turnout and one signal **at the same time** with one output. The output 4 can cover a load up to 0,5 Amp.

## Decoder application:

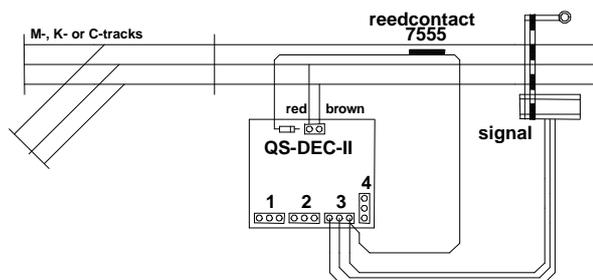
The following draft provides some examples of the multipurpose use of the decoder **QS-DEC-II**.

Besides the typical use as **turnout control** you can use the decoder for **uncoupling tracks** or **signal controls**.



With our **permanent power switch unit [DSU]** which includes a bistable relay it is possible to switch lights or other consumers up to **4Amp** digital via **KEYBOARD**, **SWITCHBOARD** or **INTERFACE** on or off.

## Automatic circuits within the digital system:



If you want to perform a digital or conventional operation of a magnet accessory e.g. simple automatic controls please attend to the draft above.

In this draft the signal will be digitally switched to 'GO' and digitally or with a reed contact switched to 'HOLD'. Therefore it is possible that a train coming from the right, which is equipped with a magnet, will switch the signal to 'HOLD' and indicates a block control.

If you connect one wire of the reed contact with the decoder output marked 'red' and the second wire of the reed contact as indicated with the anode of diode D2 of the decoder **QS-DEC-II** the reed contact will also switch the signal to 'HOLD'.

All decoders from the **Digital-Professional-Series** are **100% compatible** with the extended Motorola-Digital format and can therefore be easily and without any difficulties installed to your Märklin digital railway.

## Further products from the Digital-Professional-Series:

### S-DEC-4-MM

**4-fold turnout decoder** for up to 4 magnet accessories with self-learning decoder addresses and separate power supply.

### SA-DEC-4-MM

**4-fold switch decoder** with 4 bistable relays of up to 4 Amp. each. With self-learning decoder addresses.

### M-DEC-MM

**4-fold decoder for motor driven turnouts.** For motor current of max. 1A. With self-learning decoder addresses. Drives can be connected directly to the decoder.

### RM-88-N

**16-fold feedback module** with 16 inputs for the s88 feedback bus.

### RM-88-N-O

**16-fold feedback module** with 16 galvanic separated opto-coupler inputs for the s88 feedback bus.

### RM-GB-8-N

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

### LS-DEC

**Light signal decoder** for realistic digital switching of 2- or 3-aspect signals or up to two 7-aspect signals (home signal and advance signal on one pole).

All components can be purchased as easy to **assemble complete kits**, as **finished modules** or as ready **finished modules in a case**.

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