

## Sample Connections:

### TWIN-CENTER from Fleischmann

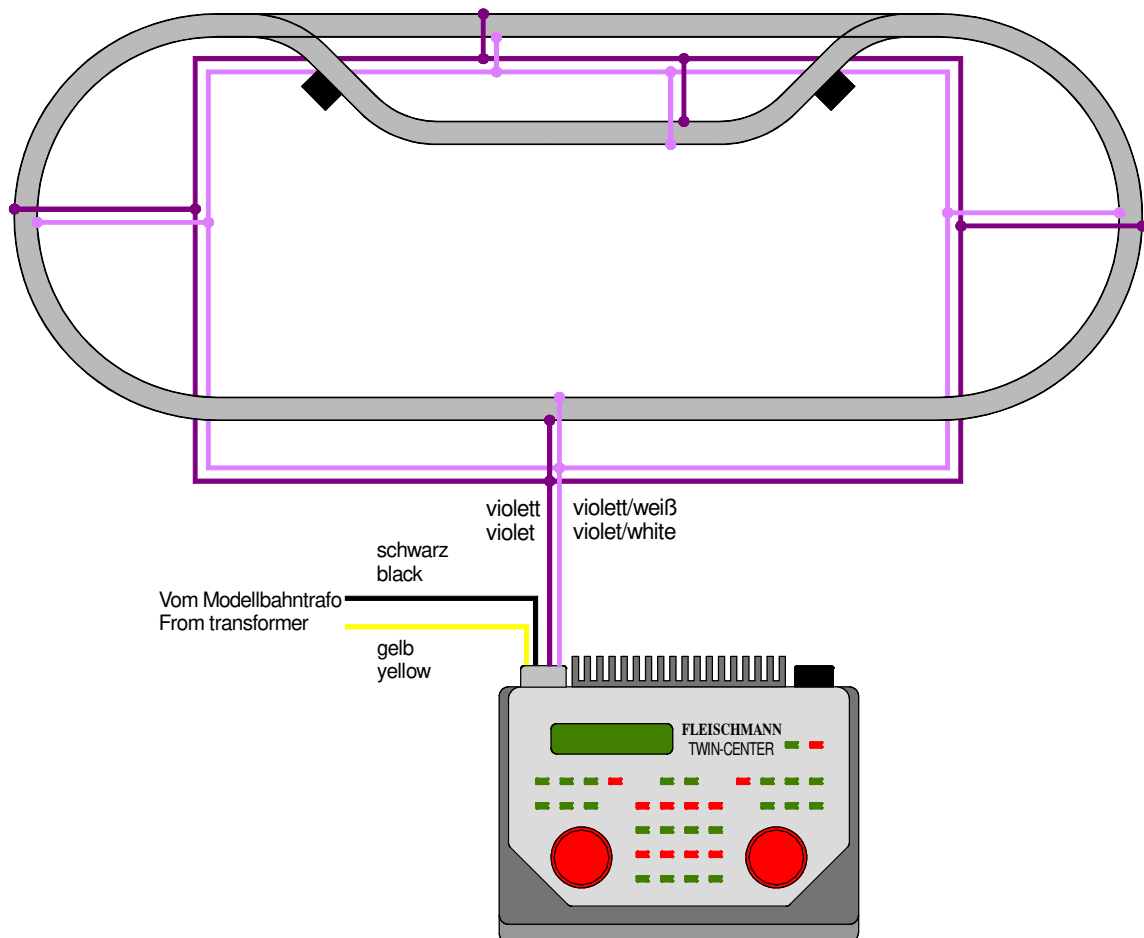
The TWIN-CENTER transmits the Fleischmann owned FMZ-Format as well as the standardized **DCC-Format** to the Lok- or accessory-decoder. This enables the control-unit to respond to **LDT-Decoders** for the DCC-format.

The TWIN-CENTER provides the **s88-feedback bus** for **feedback** of events from the tracks. The **LDT-Feedback Modules RM-88-N** and **RM-88-N-O** (both for quick-action switches) and **RM-GB-8-N** (for track occupancy reports) can communicate with the TWIN-CENTER without any problems.

On the next pages you will find some recommendations and sample connections of the TWIN-CENTER connected to **LDT** components.

#### 1. Supply tracks with digital current:

The rail connectors within a layout provide a considerable high transition resistance for the digital current. At a distance of 4 meters from the feeding connection the digital current can be eventually reduced to such a low value that the Lokdecoder receives no useable information anymore.



Via a separate main ring with several supply connections the digital-current supply to the rails will be optimized.

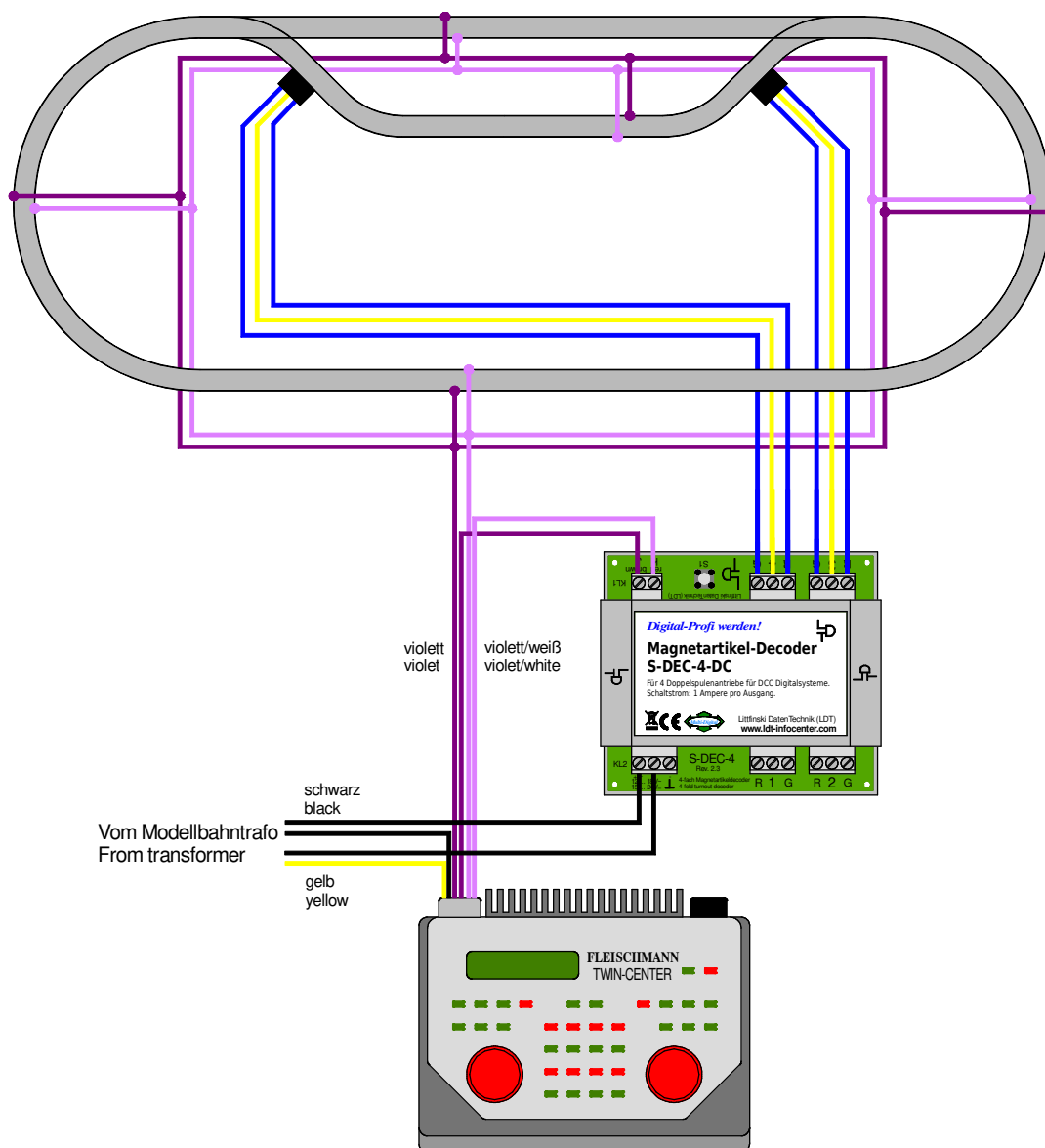
Therefore you should plan a main-ring-supply for the digital current. The wires should have 1mm<sup>2</sup> at a minimum. About every 2 meters one supply connection to the rail should be provided.

## 2. Using the LDT Accessory Decoder:

LDT offers various accessory decoder for the **DCC-Data format**. Those are suitable for the use on TWIN-CENTER of Fleischmann.

Under the expression **S-DEC-4-DC** we offer a **Turnout-Decoder** for the switching of single- and twin-coil magnetic accessories such as **turnouts, signals or un-coupling tracks**.

You can purchase by us the **Switch-Decoder (SA-DEC-4-DC)** for digital switching **illuminations** on and off or switching **track sections current-free** e.g. at a **hidden siding** or in front of **“red” signals**.



Turnout-Decoder **S-DEC-4-DC** for switching turnouts or signals with twin-coil drives.



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Further we supply a decoder (**M-DEC-DC**) for **motorized turnout drives** within our program. If you intend a digital and exemplary switching of **light signals** on your layout you can use our **Light Signal-Decoder LS-DEC**.

Further detailed information to the different decoder and their operation within the layout can be found on our **LDT Web-Site** ([www.ldt-infocenter.com](http://www.ldt-infocenter.com)) at the section "Downloads". There are all Operation-Instructions and further information such as Sample-Connections available.

On the connection plan (last page) we extended the layout by a Turnout-Decoder **S-DEC-4-DC** which can digital switch both turnouts. To assure that the current required for switching the turnouts will not charge the digital current circuit, the decoder **S-DEC-4-DC** will get the **supply** from an **external AC-output** of a transformer (as the **TWIN-CENTER** as well). **This saves expensive digital current**. All our decoder offer this convenient possibility.

As shown at the connection plan, the **digital voltage** required for the decoder will be **directly supplied from the TWIN-CENTER**. For this purpose you should assemble a second main ring supply below your layout for the supply of all accessory decoder with digital information from the **TWIN-CENTER**. As the digital information at the rails can be considerable disturbed by travelling vehicles the use of this information by a direct connection to the rail should be avoided.

### **2.1 Recommendation for operating LDT-Decoder on TWIN-CENTER:**

#### **2.1.1. Registration of DCC Decoder on TWIN-CENTER**

As per factory adjustment the **TWIN-CENTER** transmit FMZ-data to the decoder. To operate the **LDT-Decoder** the respective addresses have to be changed to **DCC**.

This operation is described within the **TWIN-CENTER** operating manual at paragraph **8.1 turnout/signals registered at the TWIN-CENTER** on page 39.

Four statements have to be adjusted for each address:

1. The so-called **Virtual Address** (from 1 to 2048). This complies e.g. to the number of a turnout.
2. The **Decoder Address** or the decoder number. There are values of 1 up to 512 adjustable.
3. At the **decoder output** values between 1 to 4 can be adjusted (as all **LDT-Decoder** contain four outputs).
4. The **Data Format**. It has to be set to **D** for DCC, if the **LDT-Decoder** shall take over the switch events.



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As the required adjustments at the TWIN-CENTER will cause probably at first some problems, we have created a table for your assistance including all details for the first 512 virtual addresses. Please load the file **twin-center\_address-table1.pdf** to your PC.

### 2.1.2. Programming the decoder address

During the operation at the TWIN-CENTER it can happen that after actuating the programming key the decoder will switch the turnout at output 1 immediately into a **fast sequence** such as it would confirm the programming of an address. In this case the **address repetition storage** of the TWIN-CENTER contains **by error data** on which the decoder is already reacting.

Proceed now as follows:

1. **Program** the decoder **immediately after switching-on** the digital central unit, **before** any loc is travelling.
2. Proceed with a **RESET** of the digital central unit. All stored data will be preserved, only the **address repetition storage will be deleted**. On the TWIN-CENTER you have to activate at switched-on status the keys **GO** and **STOP** together until “reset” will be shown at the display.

### 2.1.3. Adjusting the switching times

The TWIN-CENTER output is not a clear DCC-data format but a mixture of FMZ and DCC format.

LDT-Decoder are optimal tuned to this data format. But will the decoder not switch always reliable it is possible to adapt the TWIN-CENTER to the requirement.

At the paragraph **8.5 Adjustment of switching time** (page 42 of the TWIN-CENTER Operating Manual) this procedure is explained in detail. The **factory adjustment** has been set for the minimal and maximal switching time of **50ms**.

To solve the above described problem please extend the switching time up to **250ms**.

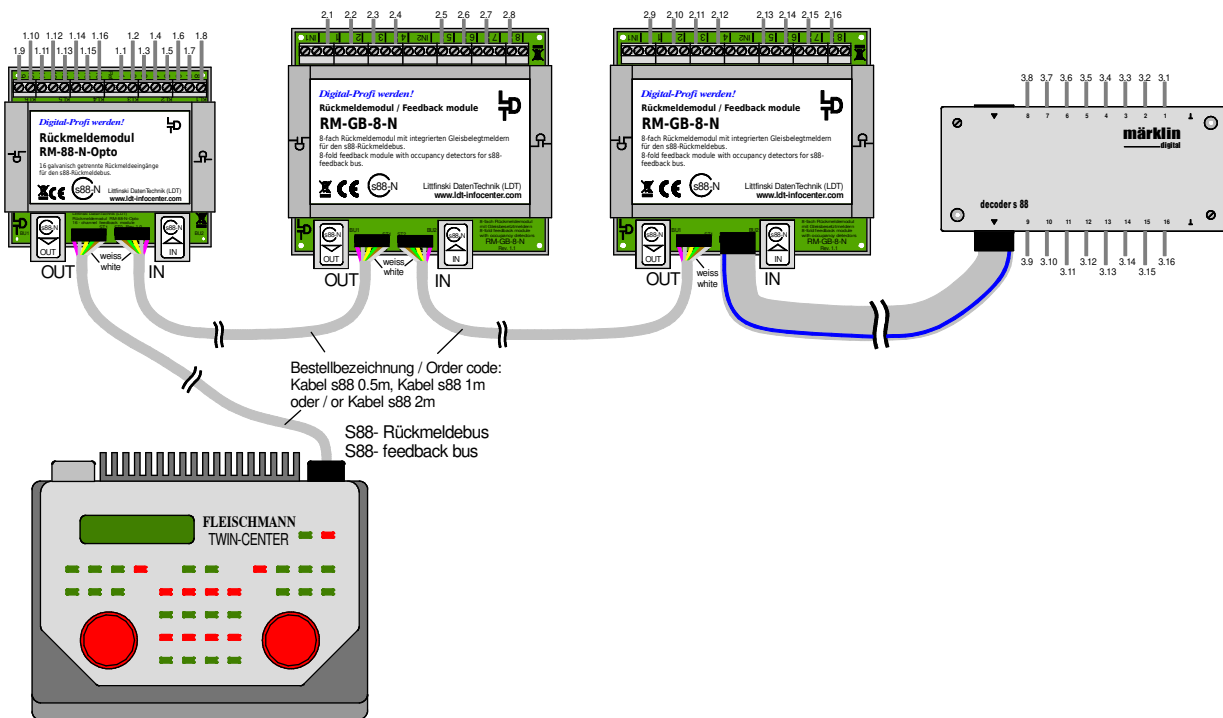
### 3. Operation of LDT Feedback Modules on the s88-feedback bus:

The TWIN-CENTER is equipped with an **s88-feedback bus** and enables therefore the possibility to **operate** the **LDT-Feedback Modules** with this system

At the s88-feedback bus all feedback modules are connected behind each other and build therefore a feedback line.

Different feedback modules (even from different manufacturer) can be combined within the feedback line.

The first feedback module shall be connected directly to the TWIN-CENTER (**LDT-Feedback Modules** are equipped with an **original plug** for the TWIN-CENTER), all further modules shall follow and build together a feedback line.



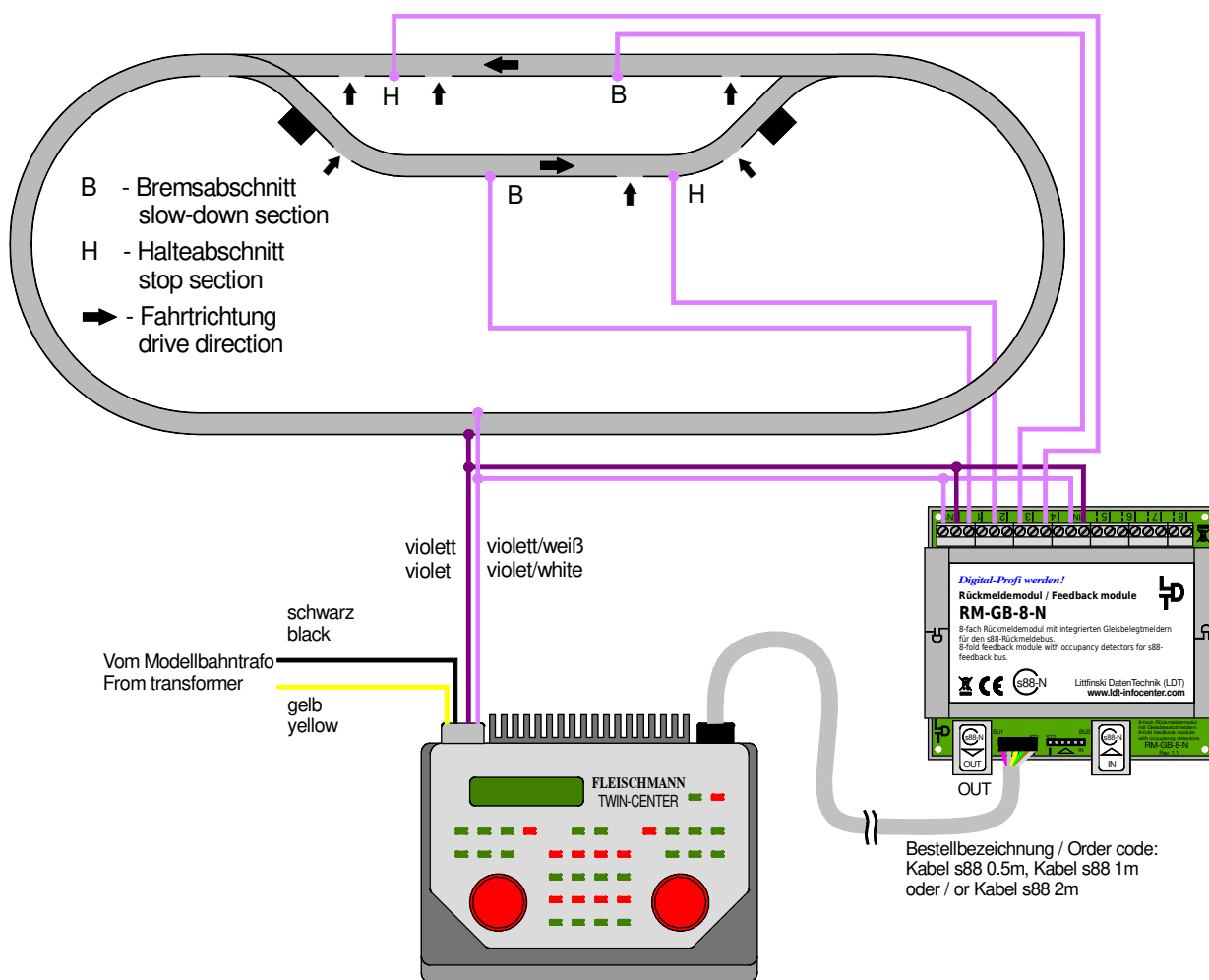
LDT-Feedback Module (RM-88-N-Opto for quick action switches and RM-GB-8-N with integrated track occupancy reporting) and a Märklin s88-module at the s88-feedback bus of the TWIN-CENTER.

At the sample connection is at first the Feedback Module **RM-88-N-Opto** with 16 inputs for quick action switches (reed contacts etc.) directly connected to the TWIN-CENTER as the first module.

It follows by two **RM-GB-8-N** with 8 track occupancy detectors each and an s88-standard module from Märklin.

Further **information** to our **feedback modules for quick action switches** and the **useable rail contacts** can be found within the file “**rm88\_info\_en.pdf**”. Those can be loaded to your PC from our Web-Site ([www.ldt-infocenter.com](http://www.ldt-infocenter.com)) at the area “Downloads” or red and printed with the Acrobat Reader.

If you require a transmittance of **track occupancy reports** from a 2-conductor rail system to the TWIN-CENTER (and eventually further report to the model railway software at the PC), our Feedback Module with integrated track occupancy detector **RM-GB-8-N** will be an excellent solution. The monitored track sections get the digital current supply via the feedback module. Has been a current consumer located at the monitored track section this will be reported to the TWIN-CENTER via the s88-feedback bus.



Track occupancy reports transmitted with very low wiring effort by the **LDT-Feedback Module RM-GB-8-N** via the s88-feedback bus to the TWIN-CENTER.

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