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Sample connections and application for feedback module RS-16-Opto!

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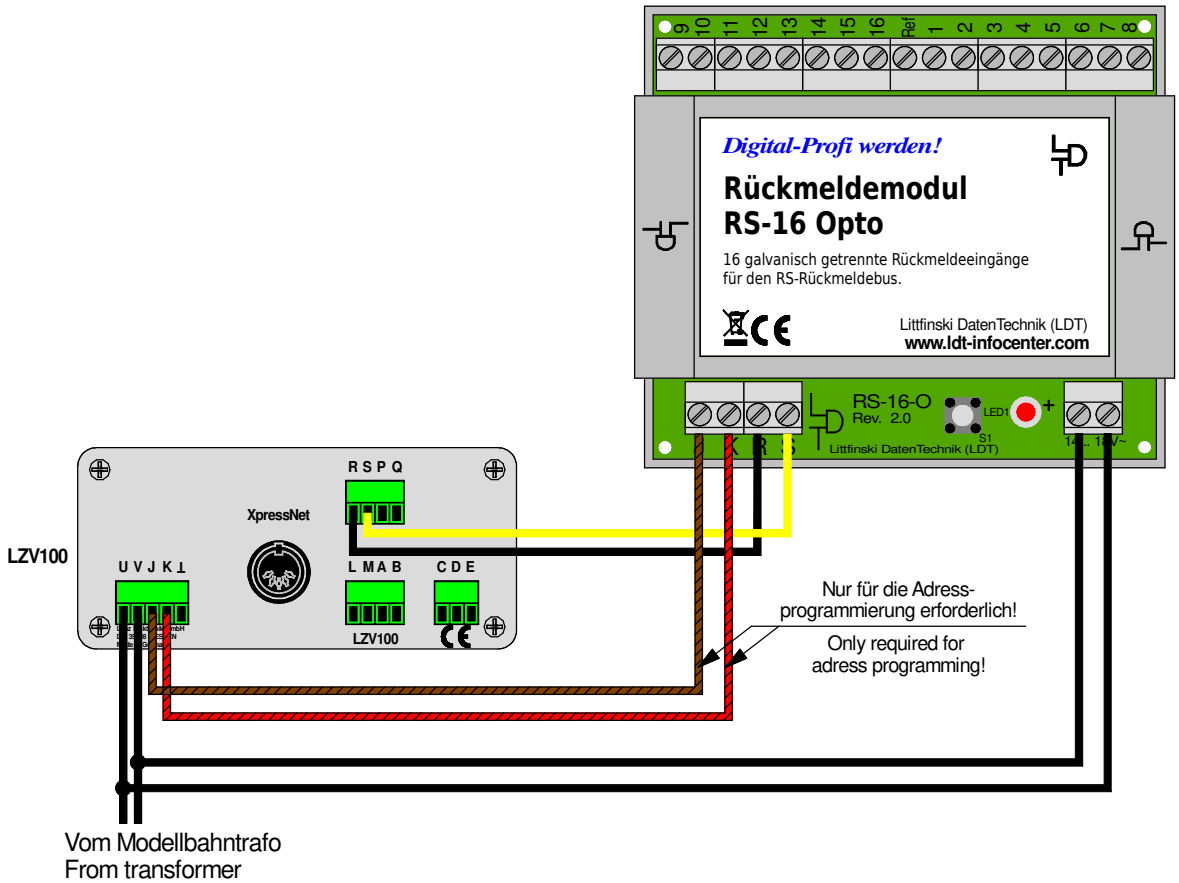
1. Connect feedback modules to the Digital plus System

General:

For the information transfer there are all existing feedback modules of the system connected to the central unit **LZ100** or **LZV100** and to each other via the **RS-feedback bus** (cables to the clamps **R** and **S**). Each feedback module receives a **unique address** which shall be only **once available** on the system. Information about setting the feedback address can be found within the **operating instruction** of **RS-16-O**.
The connection **J** and **K** shall be connected to the ports with same markings at the power amplifier **LV101 / LZV100**.
The feedback module **RS-16-O** receives the **power supply** via the **2-poles clamp**. Connect here an accelerated voltage of a **model railway transformer (14 to 18V~)**. It is also possible to supply **digital current** to the clamps (**J** and **K**).

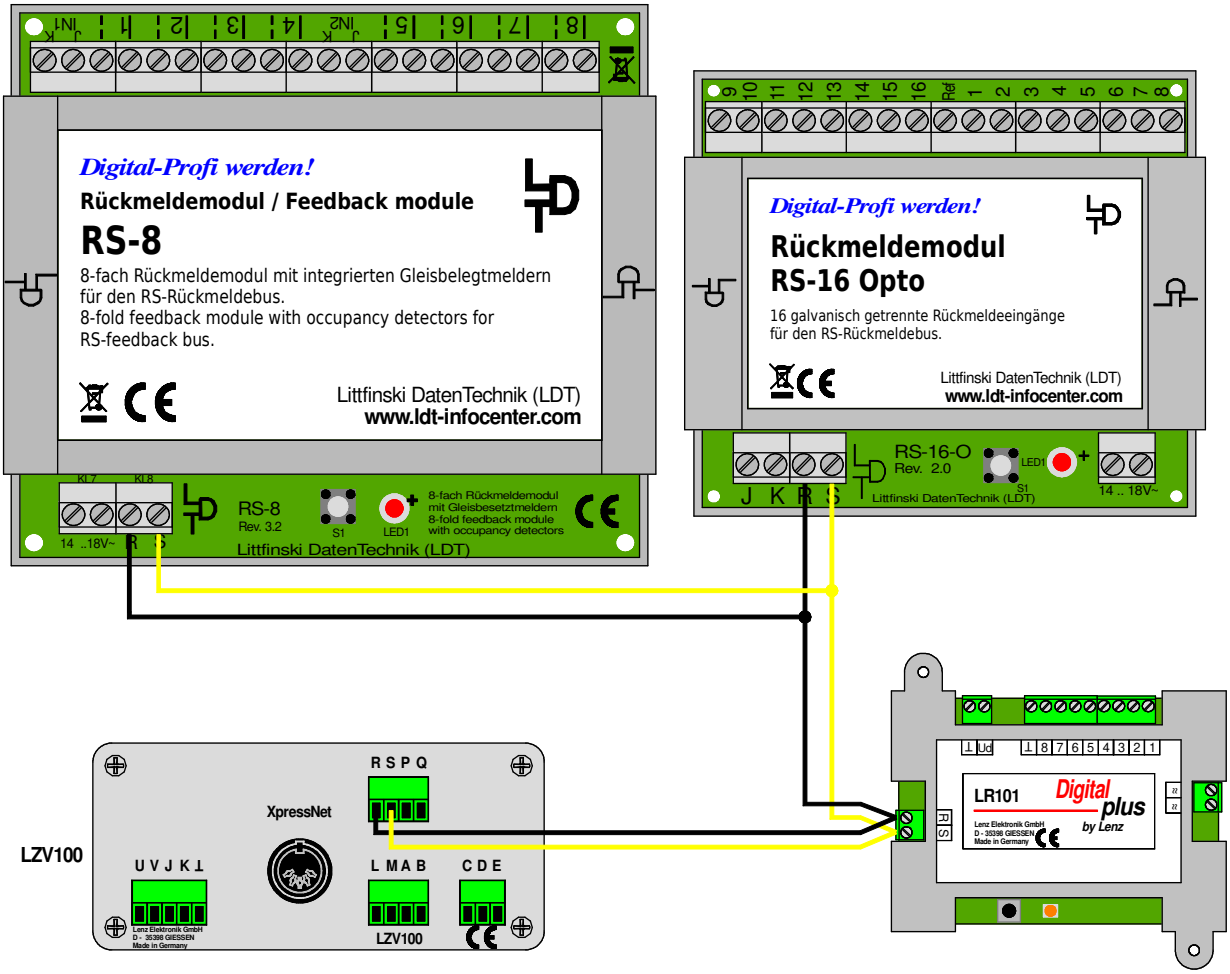
1.1 Connect feedback modules to the digital system



RS-16-O connection to a model railway transformer and digital central unit LZV100.

1.2 Various feedback modules on the RS-feedback bus

All feedback modules of your digital system shall be connected to the **central unit LZ100/LZV100** and respectively to each other via the cables on the ports **R** and **S**. It is possible to **combine different feedback modules** together. The below draft shows a **LR101**, a **RS-16-O** and a **RS-8** with integrated track occupancy (8fold).

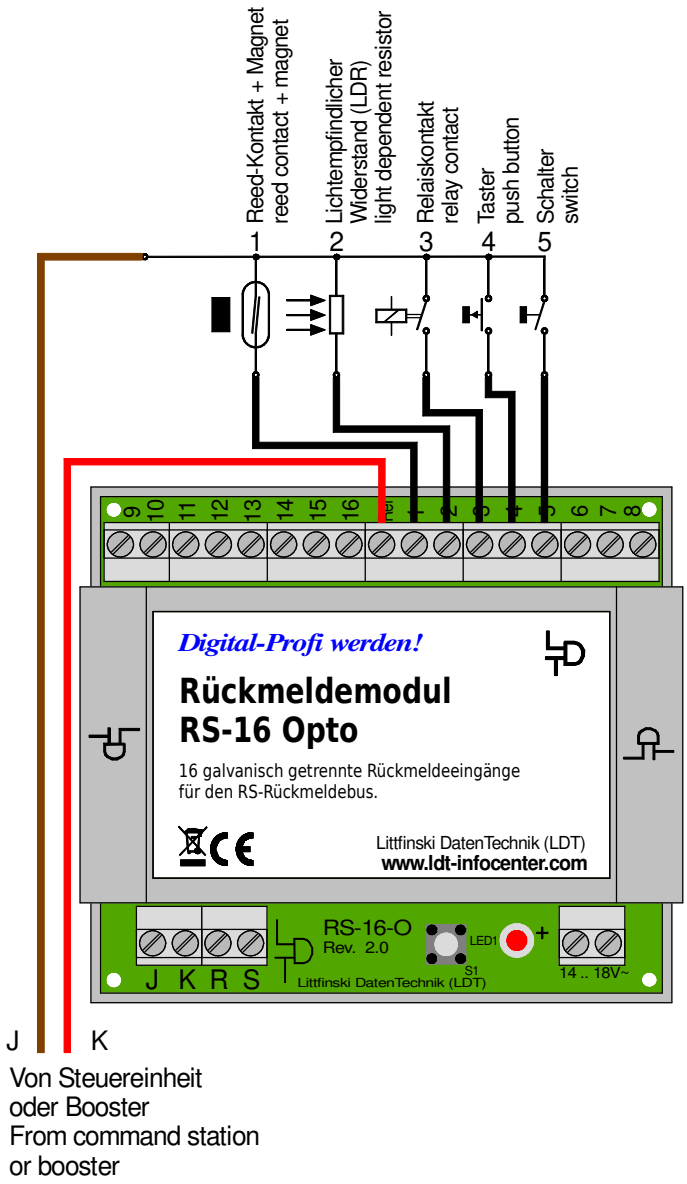


All feedback modules shall be connected to the central unit LZV100 to each other via the RS-feedback bus.

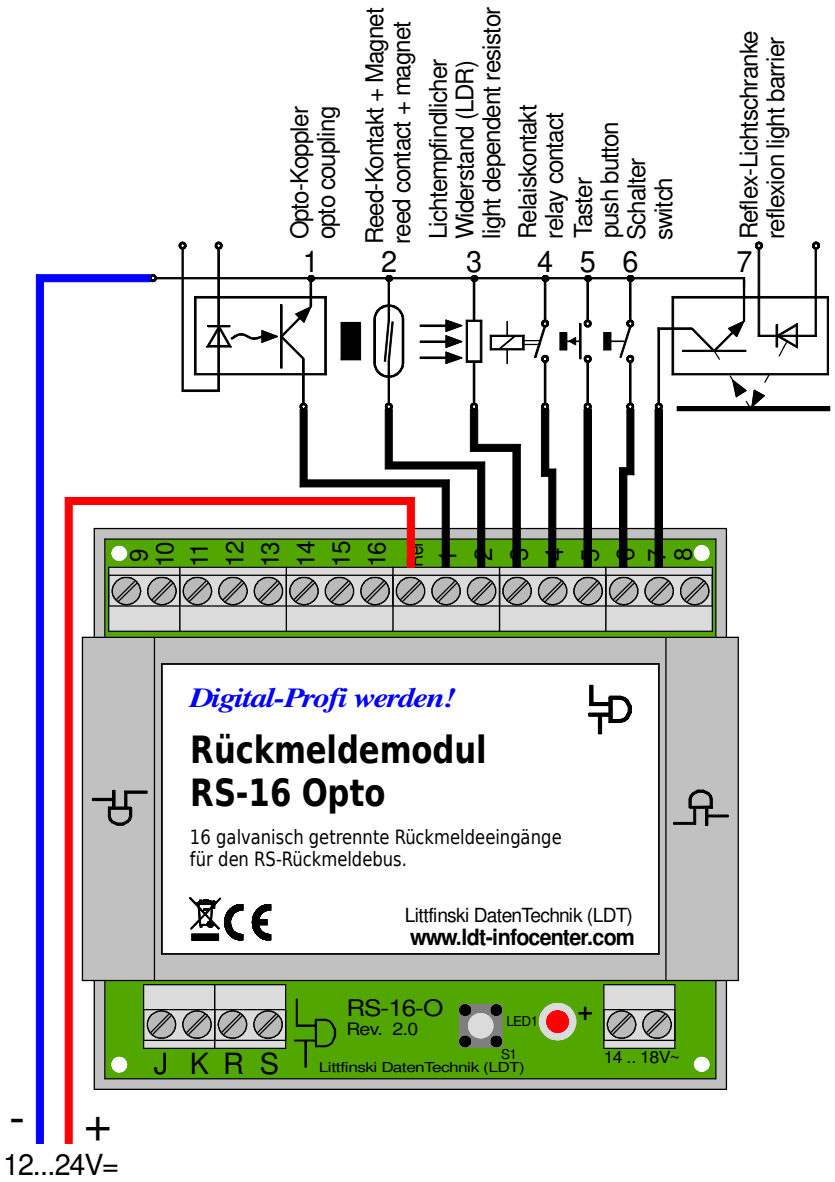
2. Sample connection: various feedback contacts

2.1 Various feedback contacts

The feedback module **RS-16-O** reports the switch events of various contacts via the RS-bus to the central unit LZ100. Up to **16 switch-contacts** can be connected to the feedback module **RS-16-O**. The **16 inputs** of the **RS-16-O** are equipped with **opto-couplings** to enable the module to feedback signals with **different electrical potentials**. A **common ground** connection of the power supply and the feedback contacts is therefore **not required**.
The input marked **Ref** in the center of the 17-poles clamp is the **common pole** of the feedback contacts.
All usual **model railway DC- and digital-voltages** are suitable as power supply for the feedback contacts.



Connection of different feedback contacts, with supply of digital-voltage (J and K).



Connection of different feedback modules with DC- power supply.

2.2 Reed contacts

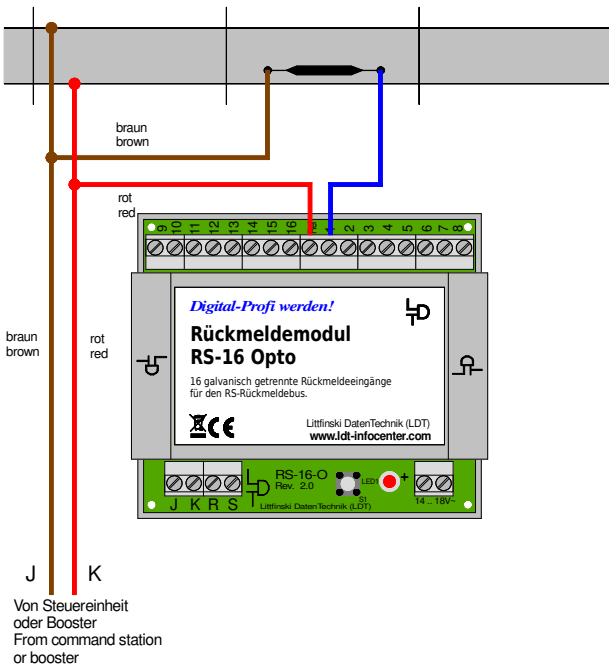
Each **reed-contact** is a **quick-action-switch** which can be integrated into the rail. Every vehicle which equipped with a **magnet** can release a switch contact. The feedback module **RS-16-O** reports every contact change (reed-contact closed or opened) immediately to the connected central unit via the RS-feedback bus.
Even if fast driving trains will pass no switch event will be lost.

Customary reed-contacts can be used instead of the original reed-contacts of the track supplier. We can supply two types: **REED 1** with a length of 10mm and **REED 2** with a length of 15mm. Further details are available within our price-list.

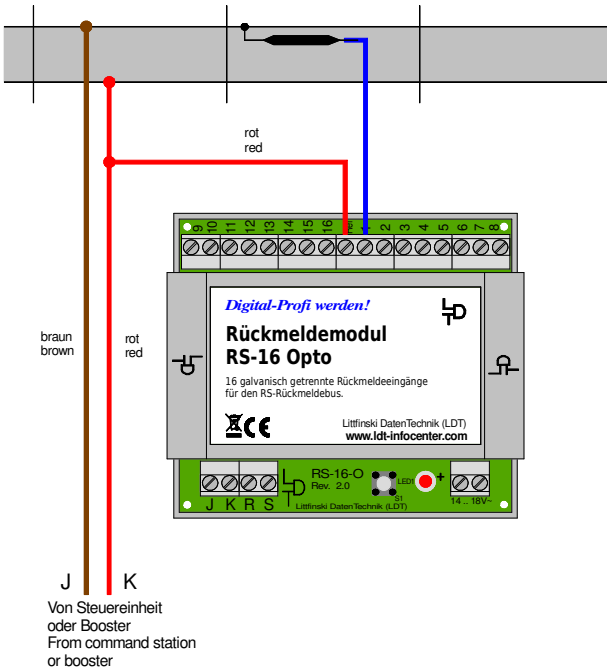
As shown in the drafts one side of the reed-contact shall be connected to one of the 16 inputs of the feedback module **RS-16-O**.
The second connection of the reed-contact shall be connected direct to one of the two poles of the digital voltage (left) or to the respective rail (right).

The second pole of the digital voltage shall be connected to the input marked **Ref** in the center of the 17-poles clamp.

The wires **J** and **K** of the digital voltage can be connected with the polarity as shown in the draft or vice versa as well.
On this way up to 16 reed-contacts can be monitored with one **RS-16-O** feedback module.



Reed contacts with direct supply.



Reed contact with supply from a rail.

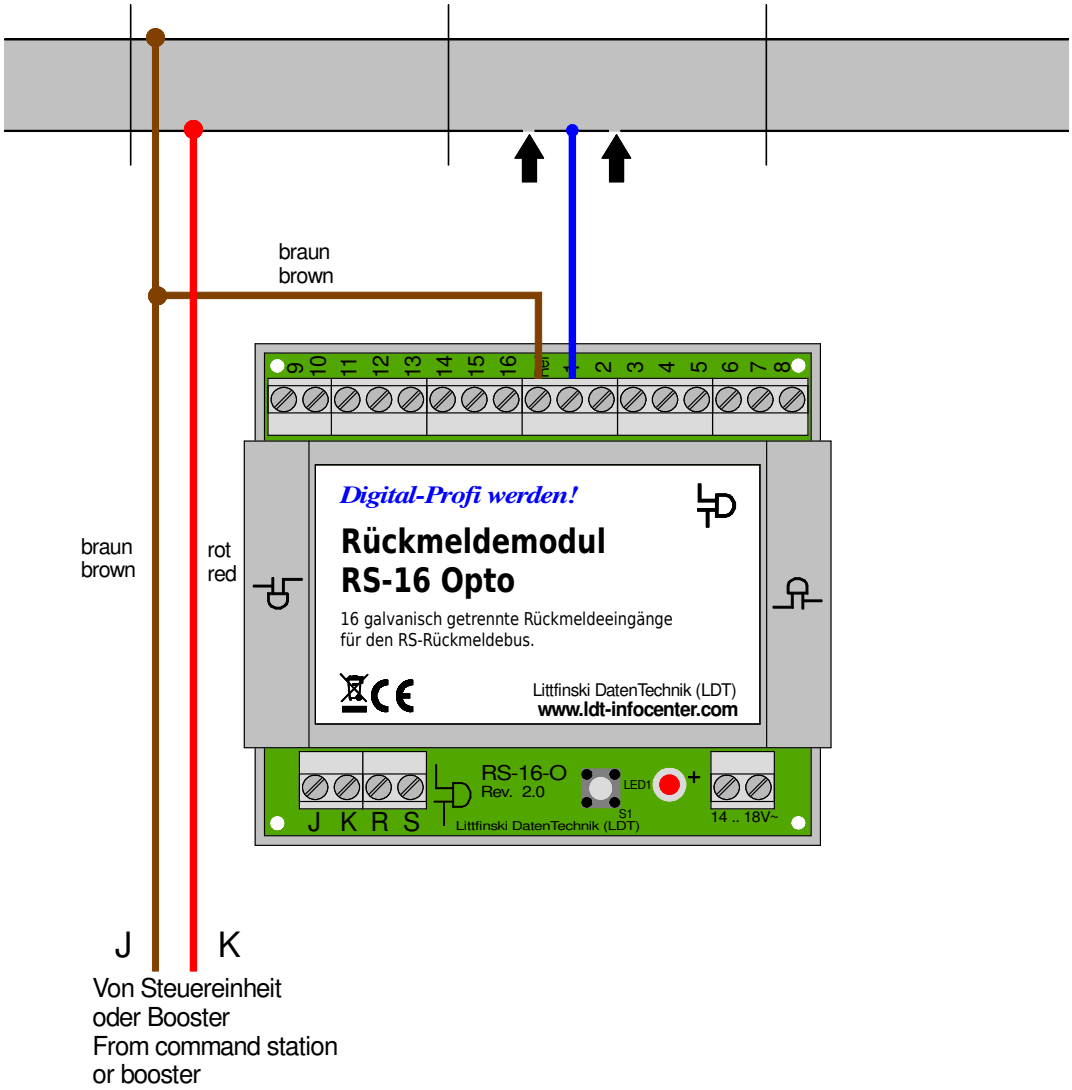
2.3 Contact rail as quick-action-contact

With reason to the galvanic separation is it possible to create a simple quick-action-contact with our feedback module **RS-16-O** by isolating a small rail section. In accordance to the nominal size the isolated section should be about 3 to 5mm long, to assure that no locomotive will stop at this section because of lack of current.

Every passing wheel will release a contact during it passes the separated section because the isolated section will be intermittent supplied with power from the non-isolated section during this period.

The feedback module **RS-16-O** reports every contact change (current flows or no current flow) immediately to the connected central unit LZ100/LZV100 via the RS-feedback bus.
Even if fast driving trains will pass no switch event will be lost.

This is a very cheap method to create a feedback contact as quick-action-contact at the two-conductor-system.



Feedback report via a short contact rail as quick-action-contact.

2.4 Contact-rail switch

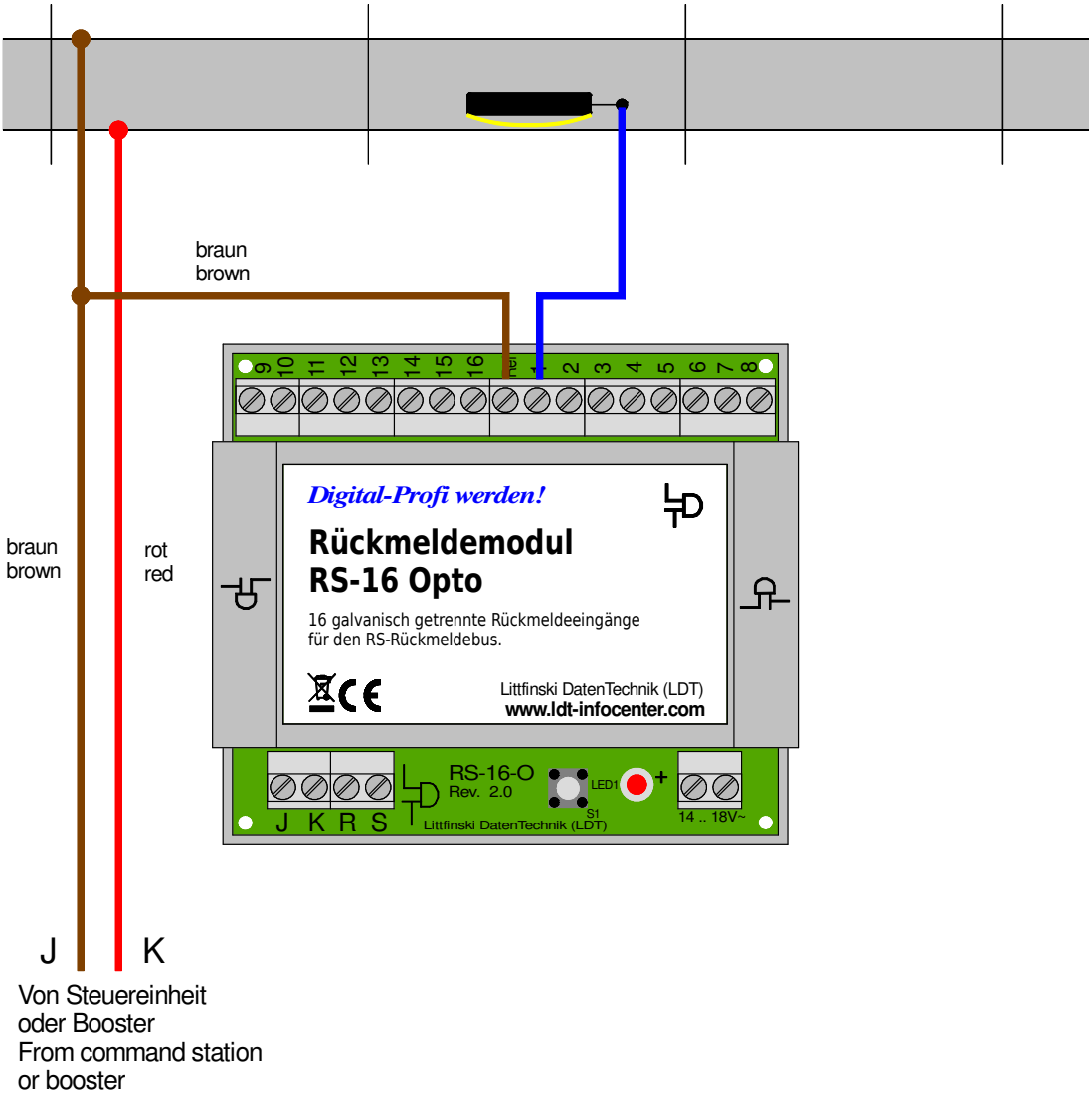
For the contact-rail-switch (e.g. from Arnold, Part No. 7440) each passing metal wheel will create an electrical connection to the current-carrying rail. As this kind of feedback is not potential free is it an excellent application for our **RS-16-O** because of its galvanic separation.

The following wiring-draft shows the connection of a contact-rail-switch.

As soon as a metal wheel moves into the switching section current will flow into the connected feedback input.

The feedback module **RS-16-O** reports every contact change (current flows or no current flow) immediately to the connected central unit LZ100/LZV100 via the RS-feedback bus.

Even if fast driving trains will pass no switch event will be lost.



Feedback report via a contact-rail-switch.

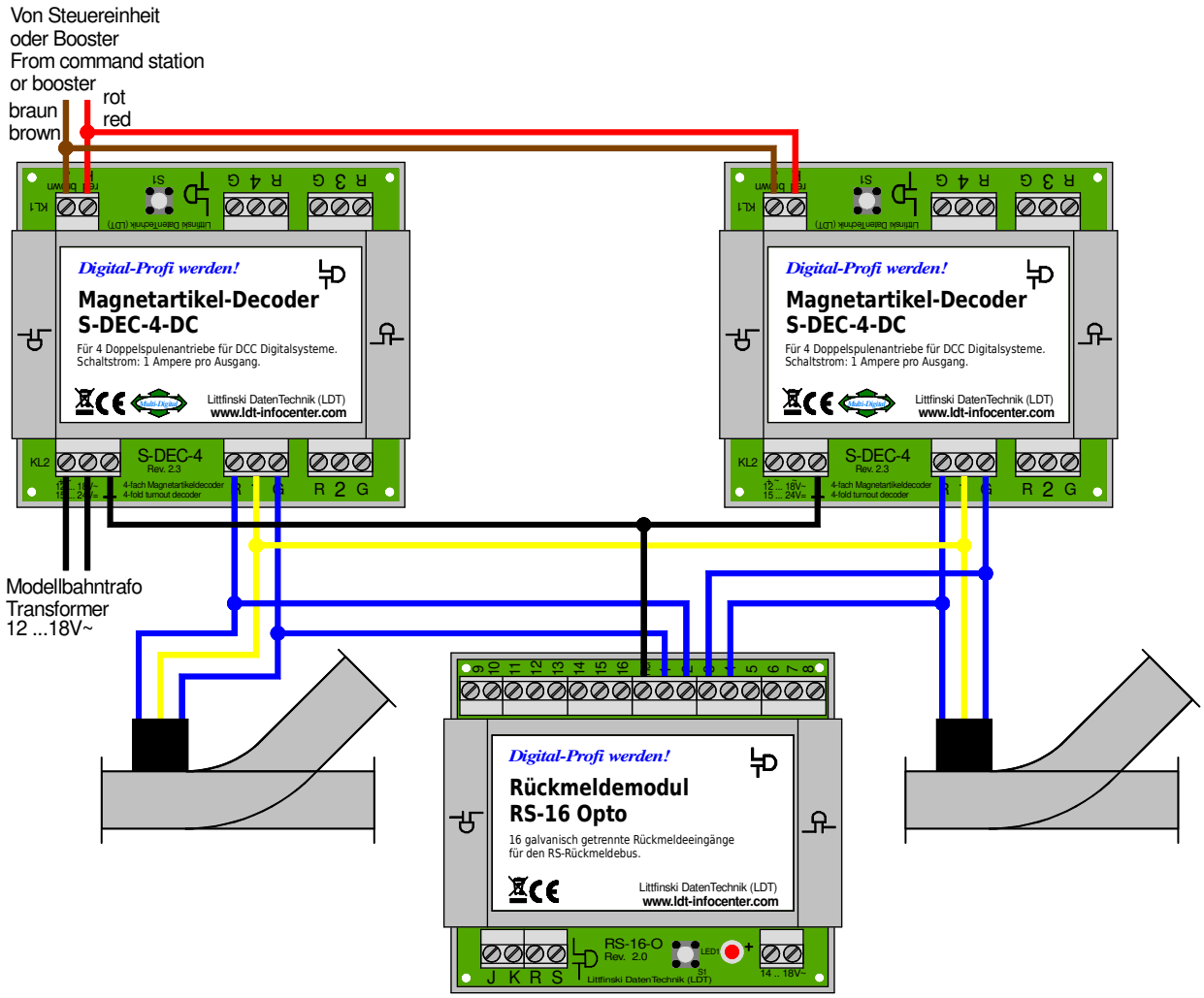
2.5 Turnout feedback

If you require a **feedback of the turnout** status via the RS-feedback bus you can assemble the wiring in accordance to the **below connection circuit.**

It is important that the turnouts include an **end position switch**.

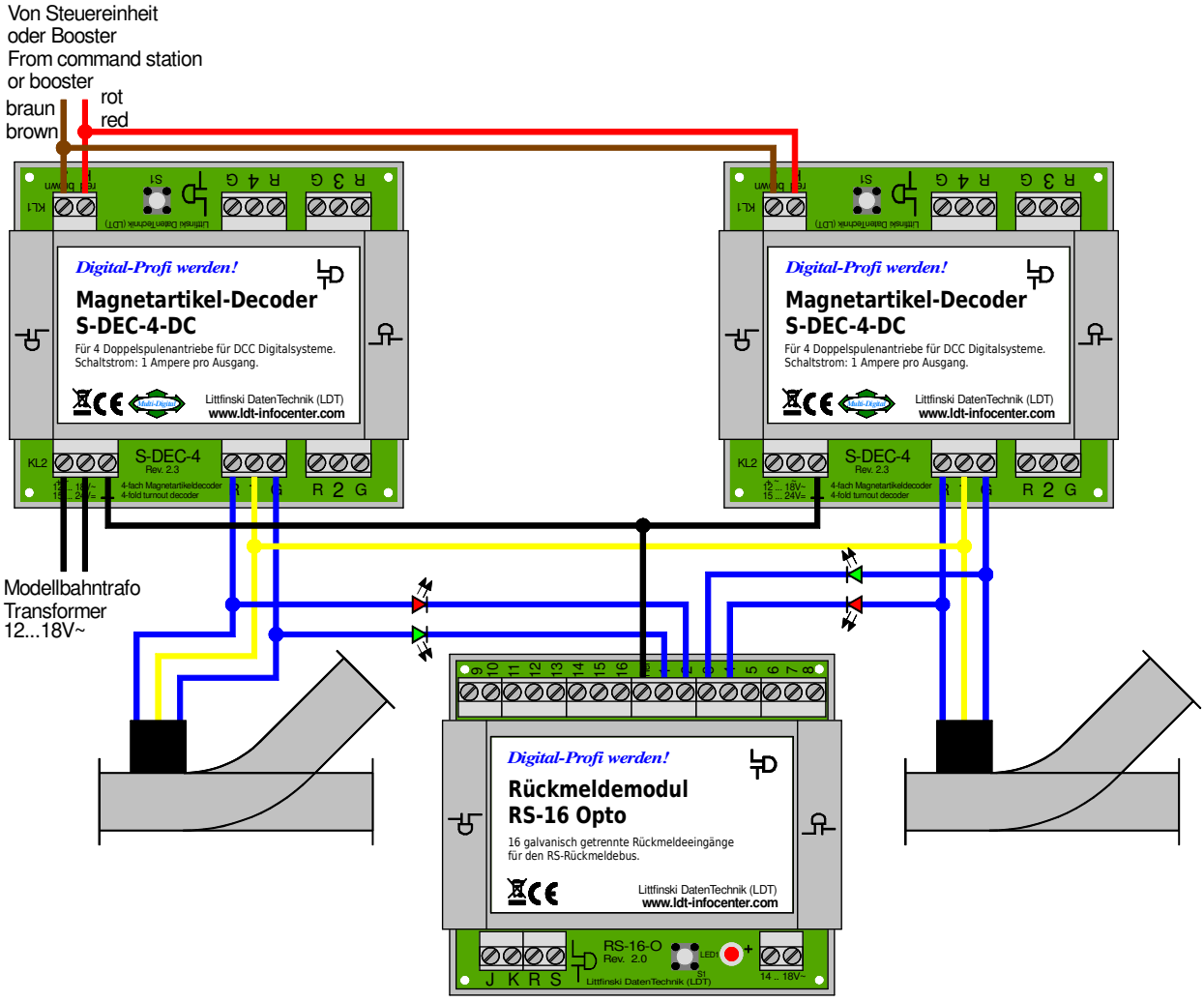
For clarification the sample connection shows 2 connected turnouts only. But it is possible to switch up to 8 turnouts with the two turnout decoders **S-DEC-4-DC** and report back via one feedback module **RS-16-O.**

Both decoders shall be connected via **KL1** to the **digital current circuit**. The **external voltage supply** shall be connected **only** to **one** of the two turnout decoders (as shown).



Turnout feedback of turnouts with integrated final end switch.

If you need the status of the **turnout-position additionally** indicated with **light emitting diodes** on a **rail-command-panel** please perform the wiring of the light emitting diodes as per the following connection circuit:



Turnout feedback plus light emitting diodes for the rail-command-panel.

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