



# feedback module with integrated 8-fold occupancy detectors

for the RS-feedback bus  
from the *Digital-Professional-Series* !

**RS-8-F** Part-No.: **300212**

>> finished module <<

- ⇒ **monitors up to 8 different track sections**  
(current detection from 0,001[1mA] up to 3 ampere)
- ⇒ **integrated voltage control**  
(avoiding "track free" feedback in case of power failures)
- ⇒ **separated by opto coupler**  
(between track- power supply voltage and feedback bus)
- ⇒ **compatible to RS-feedback bus)**  
(can be operated together with RS-16-O, LR101, LS100 etc.)
- ⇒ **suitable for digital control:**  
**Digital Plus** from Lenz.

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 Information:

You have purchased the 8-fold feedback module **RS-8** with integrated detection of track occupancy for your model railway. The **RS-8** is a high quality product that is supplied within the assortment of Littfinski DatenTechnik (LDT).

We wish you having a good time using this product.

Our products are either available as kits or as finished modules. The finished modules come with a **24 month warranty**.

- Please read the following instructions carefully. Warranty will expire due to damages caused by disregarding the operating instruction. LDT will also be not 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.

## Connection of the RS-8 with your digital model railway:

- **Attention:** Please switch off your digital control unit and unplug the transformers from AC-current before starting connecting the unit.
- **Power Supply:** Connect the feedback module at the 4-poles clamp with your model train transformer (14 to 18V AC). It is also possible to connect the RS-8 module directly to the digital circuit. In this case connect both clamps of KL7 to clamp J and K of a power booster (LZV100 / LV101 / LV102 / LV200).

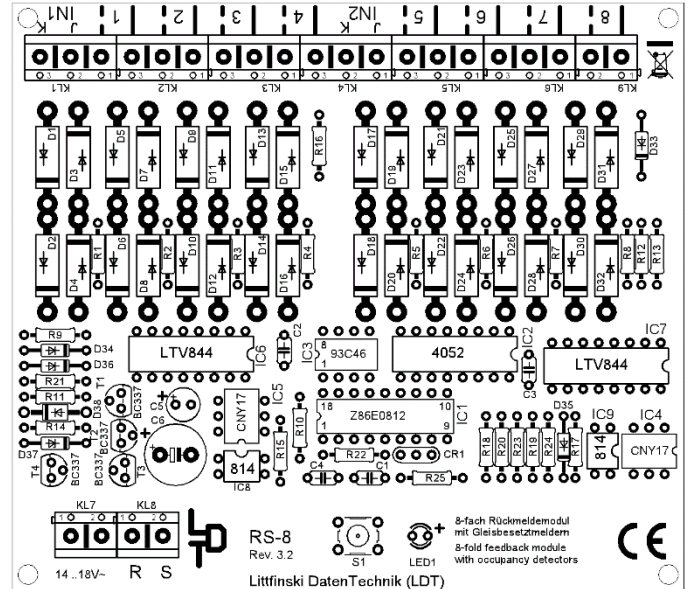
**Feedback bus:** Connect the input R and S at the 4-pole clamp to the identically marked clamps of the command station LZ100 or LZV100. Further feedback modules (RS-8, RS-16-O, LR101, LS100 etc.) have to be simply connected in parallel.

**Digital Current:** Connect the clamps J and K at IN1 and IN2 of the 20-pole clamp with the identically marked clamps on the power booster LZV100 / LV101 / LV102 / LV200).

## General Functions:

The feedback module **RS-8** combines the **occupied track detection** and the **feedback** function. The **8 detectors for occupied tracks** work by **detection of current**. In cases a connected track is occupied by an object with a minimum of 0,001 Ampere (1mA) consuming current, the track will be detected as occupied.

**Locomotive decoder, coach lights** or **resistance axles** are **consuming electrical power** and therefore induce the detection of an occupied track.



The **max. track current per output** shall not exceed **3 Ampere**. A **peak current** of up to **7 Ampere** is acceptable. The supply

**booster** has to identify the **overload** or **short circuit** and has to **switch off**.

The **track voltage** (digital current circuit), the **power supply** and the **feedback bus** are **separated by opto galvanic**.

The current for the tracks can therefore safely be supplied from different transformers without having a negative effect on the power booster (LZV100 / LV101 / LV102 / LV200).

The **modular concept** of **occupied track detectors** and **feedback decoders** implements a considerable problem: As soon as there is no electrical power on the tracks, all tracks are detected as free because no consuming current is detected. There are track occupied detectors available on the market which use an auxiliary voltage to solve this problem, but this can influence sometimes the locomotive decoder causing disturbances and is therefore no suitable solution.

As the feedback module **RS-8** has a build-in intelligence (microprocessor Z86... [IC1], we have integrated a solution called **voltage-monitor**. In case of voltage drop or short circuit there is no inaccurate "free track" detection reported back via the feedback bus to the digital control unit or the PC. All track occupancies will be "frozen" during this phase of voltage interruption.

As soon as there is current on the tracks again the actual situations on the tracks will be detected and reported back via the feedback bus.

The feedback modules **RS-8** are suitable for decentralize installation underneath the model railway installation. There are 4-bores on the edges of the modules for quick and easy installation. A suitable assembly kit (distance spacers and wood screws) is available under the order code **MON-SET**.

With order code **LDT-02** is a suitable case for the **RS-8** available. The modules are connected with each other's via the **RS-feedback bus** (cables to the connecting clamps R and S). Therefore each feedback module gets it's own individual address which is unique and cannot be allocated a second time by another module.

## Assigning addresses of the feedback module RS-8:

**Addresses** for feedback tasks at the Digital plus System are located in the **area** from **1** to **128**. To assure a definite feedback each address can only be assigned once.

In addition the feedback address area is subdivided. Area **1** to **64** is reserved for **turnout decoders with feedback function**. Feedback modules like the **RS-8** should therefore be addressed in the area between **65** and **128** to avoid overlapping.

Therefore the LDT **RS-8** feedback module is delivered with the default address **65**.

To change the address the RS-8 is equipped with a **programming key S1** and a **red light diode**. By pushing the **programming key** once the diode will **flash** which means that the **RS-8** is **ready for programming**.

Programming mode will only work, if the **J** and **K** clamps at **IN1** and **IN2** of the 20 pole clamp are properly connected to the **digital circuit** (see description above).

While the diode is flashing, you can assign the feedback address with the hand controller **LH100**. Press the keys **>F<** and **>5<** to get into the mode "magnet accessories". Enter the requested **feedback address** now (e.g. **>7<** **>4<** for 74) and press **>ENTER<**. By pressing key **>+<** or **>-<** the feedback address input will be saved. The diode will switch off if the module has accepted the address. The **RS-8** is now in operation mode again.

By pressing the keys **>ESC<**, **>F<** and **>6<** on the **LH100** you will get into the mode "feedback". Enter the previously assigned address (e.g. **>7<** and **>4<** for 74) and press **>ENTER<**.

If the **RS-8** was connected properly to the RS-feedback bus, the display of the hand control **LH100** will show a **"b"** left below the assigned feedback address.

When there was no feedback information received from the **RS-8** the display of the **LH100** shows a hyphen behind the feedback address. Check the connection of your **RS-8** and repeat programming as described above.

If you wish to control the module with a renewed model of the manual controller or with another central unit with R/S interface, you should read the respective operation manual at the section "Turnout / Signal settings" respectively "Feedback reports".

## Connecting a track section:

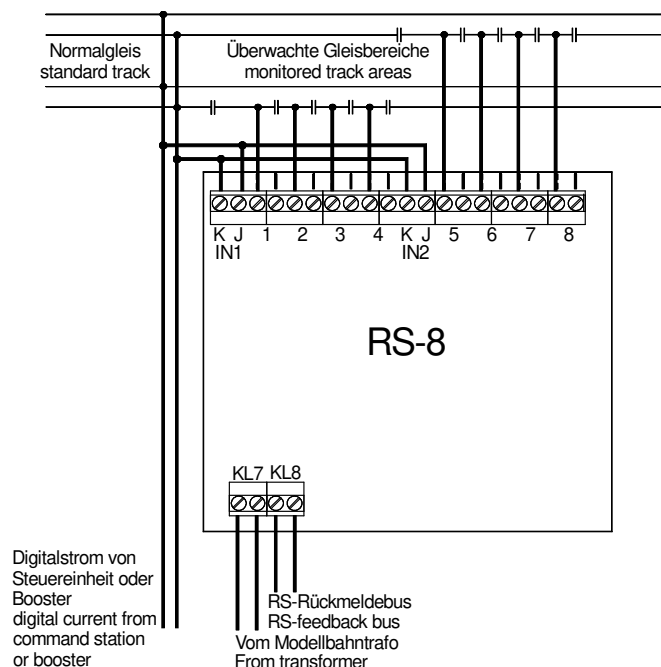
Following figure shows how to connect the feedback module **RS-8** with a track.

The monitored **isolated track sections** will get the digital current supply via **clamp 1 to 8**. It is required that one rail is isolated. Detailed **Sample Connections** are available on our web site ([www.ldt-infocenter.com](http://www.ldt-infocenter.com)) under "**Downloads**".

For **assembling 2 different** power booster (LZV100 / LV101 / LV102 / LV200) the **RS-8** is divided into **2 x 4 track occupancy controller**. The **output 1 to 4** gets the supply via the input clamps **IN1** and the **output 5 to 8** via **IN2**. Therefore, it is simply possible to monitor up to 4 track sections in a **reversing loop**. For this application a **reverse loop module** (e.g. LK100) has to be assembled **between the power booster** and the input clamp **IN1**.

Please pay attention to the identification **J** and **K** at the clamps **IN1** and **IN2** as well as on the power booster.

To avoid short circuits when locomotives are crossing the transitions of each detected track, the sequence of connecting the tracks has to be always strictly followed.



Therefore, the OUTPUT clips are marked with a continuous and a non-continuous line. Cables marked with **J** always connected to the clips with a continuous line.

In case of a short circuit when crossing the transition (control unit will switch to STOP) please change the cables at the respective OUTPUT clamps of the monitored section.

**Anti-interference capacitor** can lead to an erroneous occupied detection of the track and should therefore not be used within the monitored track sections.

If you apply **electrical resistant coating** to the **axles** of your trains, you should measure the resistance value with a Multi-meter after complete drying.

A resistance between **5** and **10 KOhm** will guarantee a safe monitoring by the occupied track detection of the feedback modules **RS-8**.

Customary used **resistance axles** with a resistance value of **18k Ohm** will just be monitored, provided that the rails are **very clean** and the railway coaches have a sufficient contact to the rails. In such case it will be recommended, to fit **two resistance axles** to the coach to receive a total resistance value of about **9k Ohm**. This will assure a save monitoring even when the rails are not perfect clean.

## Trouble shooting:

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

If you have purchased the **RS-8** as a kit, please carefully check all parts and all soldered joints.

**Important** for a **correct feedback report** is: It is absolutely required that both inputs (IN1 and IN2) will receive the supply of digital current.

Please test the detecting function of the modules first before connecting it to the tracks.

To do this you can use a resistor (several of hundred Ohms) or a model railway lamp which will simulate the occupied situation on each clamp.

Without resistor or lamp the detection of the input should be identified as "free". With a resistor or lamp your digital control unit or PC should show an "occupied" situation.

Made in Europe by

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