

8-fold track occupancy detector

from the *Digital-Professional-Series* !

GBM-8-F Part-No.: **020002**

>> finished module <<

- ⇒ **monitoring 8 track sections**
(current sensing from 0,001[1mA] up to 3 Ampere)
- ⇒ **suitable for the feedback modules**
RM-88-N-O / RM-DEC-88-O and Roco 10787
- ⇒ **no separate power supply required**

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.

CE Part-No.
40 43 98



Introduction / Safety Information:

You have purchased the 8-fold track occupancy detector **GBM-8** for your model railway layout. The **GBM-8** 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 finished modules and the finished modules in a case come with a **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 module to your digital model railway:

- **Attention:** Please switch off your digital control unit and unplug all transformers from AC-current before starting to assemble the unit.

General functional description:

The **8 track occupancy sensors** of the **GBM-8** are working in accordance to the **current sensing** principle. If there is a current consumer on a connected track section which is consuming a minimum of 0,001 Ampere (1mA) this section will be monitored as occupied.

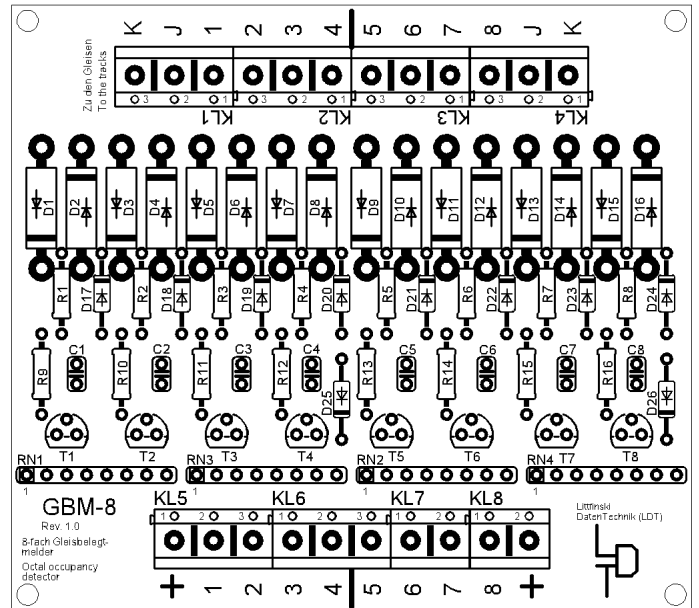
Loc-decoder, coach illumination or resistance wheel sets are electrical consumers which can release an occupancy signal.

The maximum rail current can be up to 3 Ampere on each output. Temporary is even 7 Ampere permitted on each output.

Connecting the GBM-8 to the Roco feedback module 10787:

For the connection of the **GBM-8** to the Roco feedback module at first the **sensor outputs** of the **GBM-8** have to be connected to the **sensor inputs** of the feedback module **10787**.

The clamps are exact identical marked. The wiring is very simple when the sensor clamps of the track occupancy detector and the feedback module will be situated opposite (attend to the **figure 1** at the rear side of this instruction).



Connecting track sections:

As Roco-Digital contains no explicit color identification for the two digital voltage wires (both wires are black) the input clamps for the digital current at the GBM-8 are marked with "J" and "K".

On DCC layouts the clamp marked with "J" is normally the common ground terminal. Therefore is the terminal "J" at the occupancy detector the pole of the digital voltage that has to be connected to the non-interrupted rail.

The terminal "K" of the digital voltage has to be connected to the rail that has been interrupted for monitoring purposes. The isolated rail sections which shall be monitored have to be connected to the inputs 1 to 8.

As the feedback module **10787** contains two times 4 inputs the occupancy detector **GBM-8** has been designed accordingly. Therefore is it possible to monitor 4 track sections each at two different booster areas (**figure 2** at the rear side).

If you want to control a **reversing loop** which will change the polarity via the **reversing loop module KSM-SG** you should install the wiring as per figure 3.

At the sample will be the reversing loop incl. sensor tracks controlled by the output 8 of the **GBM-8**. The remaining 7 outputs of the **GBM-8** can supply furthermore the isolated track sections at the range of the "Standard Track" outside of the reversing loop.

The **GBM-8** is as well suitable for the direct connection to the feedback module **RM-88-N-O** for the **s88-feedback bus** (**figure 4**).

With the **GBM-8** is it possible to extend the **RM-88-N-O** with the function of "track occupancy monitoring".

Colored drafts can be found at our web-site within the area "Sample Connections".

Accessories:

For safe **installation** of the 8-fold track occupancy detector **GBM-8** below your model layout we offer an **installation set** under the order code **MON-SET** and for the assembled kits a sturdy exact matching **case** (order code: **LDT-01**).

Figure 1: The **GBM-8** has to be connected directly to the **Roco Feedback Module 10787**. 8 isolated track sections can be monitored.

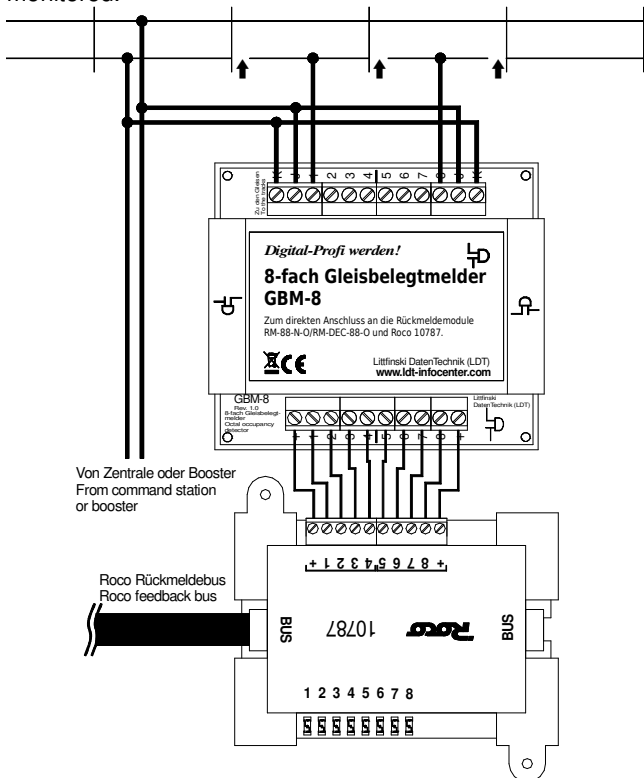


Figure 2: The **GBM-8** contains 2 times 4 inputs. This enables to monitor 4 track sections each at **two different booster circuits**.

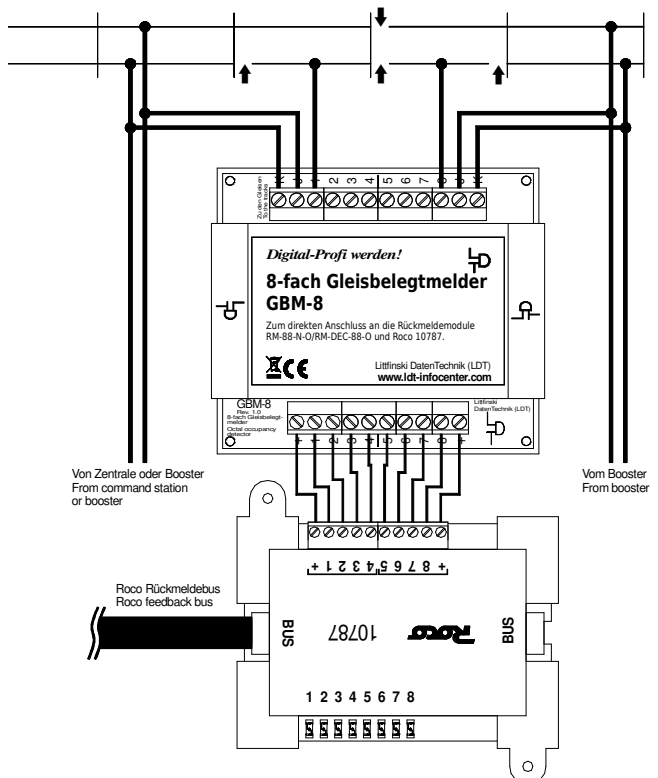


Figure 3: The reverse loop including the sensor tracks will be controlled via the output 8 of the **GBM-8** and via the **reverse loop module KSM-SG**. Output 1 controls a "normal track".

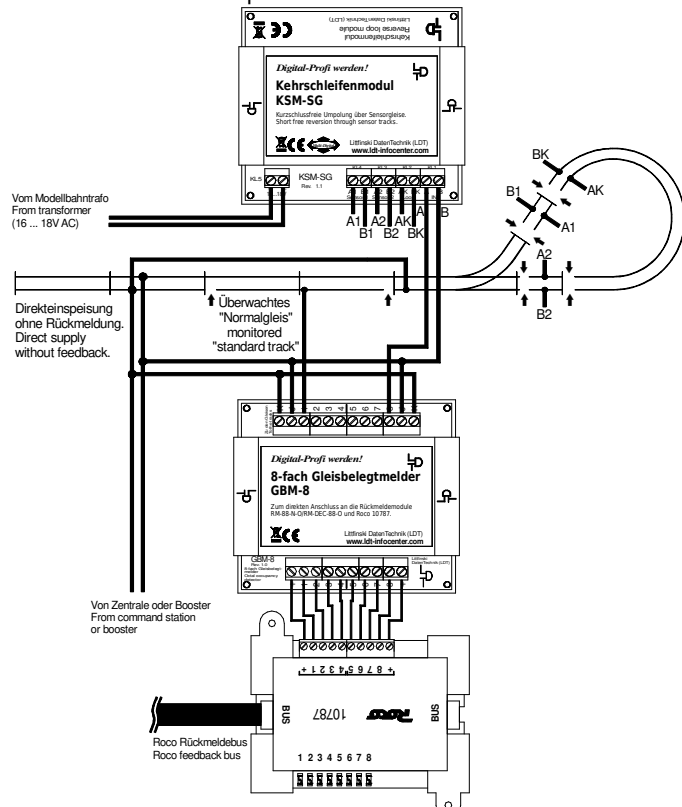
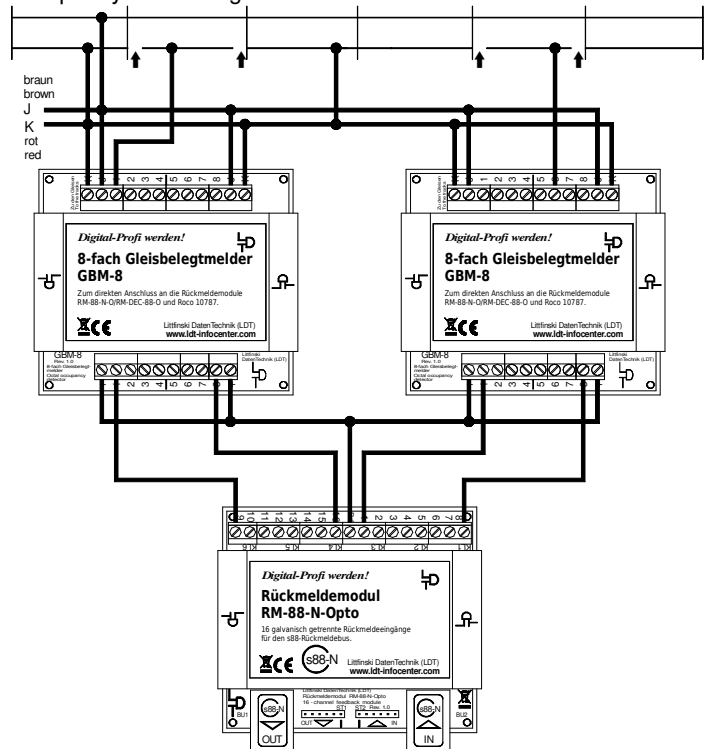


Figure 4: Also the 16-fold feedback module **RM-88-N-O** for the s88-feedback bus can be extended with the function "track occupancy monitoring" with two **GBM-8**.



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