



16-fold feedback module

from the *Digital-Professional-Series!*

RM-DEC-88-O-F Part-No.: 310302

As Märklin s88 but with 16 opto coupling inputs.

>> finished module <<

As Märklin **s88** with 16 inputs but additionally with opto couplings for galvanic separation and high safety against interferences.

Suitable for digital devices with s88-feedback bus:

- ⇒ Märklin-**INTERFACE** (up to 31 modules)
- ⇒ Märklin-**MEMORY** (up to 3 modules)
- ⇒ **Intellibox / TWIN-CENTER** (up to 31 modules)
- ⇒ **DiCoStation / HSI-88** (up to 31 modules)
Littfinski DatenTechnik (LDT)
- ⇒ **EasyControl / ECoS** (up to 31 modules)

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 years of age! Improper use will imply danger of injuring due to sharp edges and tips! Please store this instruction carefully.



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Introduction / Safety Information:

You have purchased the feedback module **RM-DEC-88-O** for your digital model railway.

The **RM-DEC-88-O** is a high quality product which is supplied within the *Digital-Professional-Series* of Littfinski DatenTechnik (LDT).

We are wishing you having a good time using this product.

The finished modules come with a **2-years warranty**.

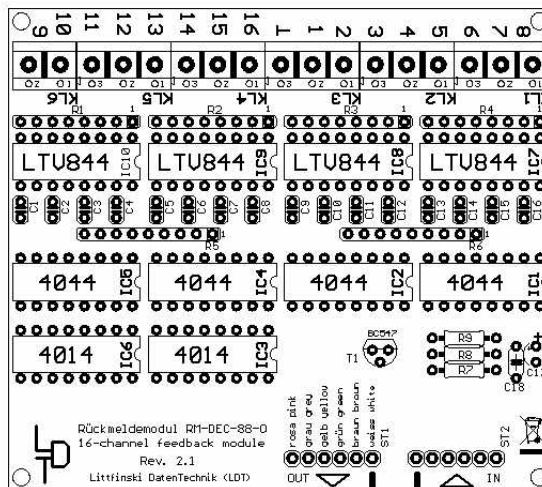
- Please read the following instructions carefully. Warranty will expire due to damages caused by disregarding the operating instructions. LDT will also not be liable for any consequential damage caused by improper use or installation.

Connecting the module to your digital model railway:

- **Attention:** Please switch off your model railway by disconnecting the transformers from AC-current before starting any installation.
- Connect the 6-pole plug to the Märklin-**INTERFACE**, Märklin-**MEMORY**, **Intellibox** or **TWIN-CENTER**, **EasyControl**, **ECoS** or existing **s88** feedback modules with the direction of the connection cable to the bottom side. The plugs of further connected feedback modules have to be connected in a way to the 6-pole pin-plug-bar that the cable will be directed away from the pc-board. The white marking at one side of the pin-plug-bar has to correspond to the white single wire of the s88-bus cable of the following modules.

General Functions:

The feedback module **RM-DEC-88-O** with 16 inputs is 100% compatible to the s88. The inputs are additionally equipped with **opto coupling** which provides extremely interference-free transmittance. This will also allow an easy direct connection of **potential carrying contacts** as used by two-rail conductor systems or for turnout feedback reports.



The feedback module **RM-DEC-88-O** is suitable for decentralized installation below the model railway layout. There are 4 bores on the pc-board for quick and easy installation. A suitable installation kit consisting of four distance spacers and four wood-screws is available under the order code **MON-SET**. An exact matching case for the feedback module can be ordered under coder **LDT-01**.

The modules can be connected to each other by a bus-cable of 75cm length. In case this distance has to be extended it is possible to order a **2 meter cable extension** under order code **Kabel s88**.

Connection to Märklin-Memory / INTERFACE, Intellibox / TWIN-CENTER, DiCoStation, HSI-88, EasyControl or ECoS:

Up to 3 feedback modules can be connected to each Märklin-**Memory**.

The feedback signals of up to 31 modules can be controlled by connection to Märklin-**INTERFACE**, **Intellibox** or **TWIN-CENTER**, **DiCoStation**, **HSI-88**, **EasyControl** and **ECoS**.

After switching on the power to the digital system the feedback modules will be numerical identified at the sequence as they are connected to the central unit.

For example, the first feedback module directly connected to the Märklin-**MEMORY** will be addressed to the key-group **A1** to **A8**.

Contacts 1 to 8 of the **MEMORY** will perform switching tasks (like request of a drive-track) whereas contacts 9 to 16 are responsible for circuit release (e.g. hold tracks occupied).

Märklin-INTERFACE, **Intellibox** or **TWIN-CENTER**, **DiCoStation**, **HSI-88**, **EasyControl** and **ECoS** do not use this kind of differences of subdivisions at switching and release. All 16 inputs have equal access (activated or not activated).

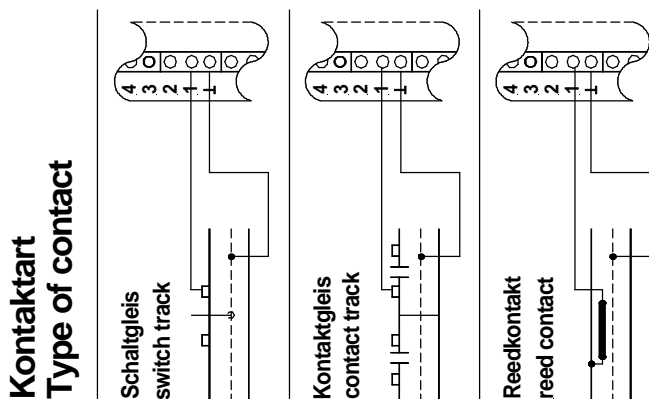
If you intend to extend your model railway with **RM-DEC-88-O** feedback modules you can easily combine these with any existing s88 modules.

Please make sure that the digital layout has been switched off when connecting the decoders with the 6-pole plug. Check carefully the correct orientation of the plugs.

Connection of contacts:

1. Three-rail conductor system:

The following draft shows the connection of **switch-rails**, **contact-rails** and **reed-contacts** to the input clamps 1 to 16 of the **RM-DEC-88-O** feedback module.



All shown above connections conform exactly to the wiring known from the s88.

There is only one small difference:

To assure the transmittance of an occupancy report it is required to have a small current flow at the opto coupling inputs of the **RM-DEC-88-O**. Therefore the **reference input (center connection clamp** marked with ^) has to be connected to the digital supply terminal which supplies the **center conductor**.

At the **3-rail conductor system** this will be the terminal with the cable color "**red**". It does not matter to which booster it will be connected as all boosters are connected to each other via the system ground (brown).

For further examples please visit our web-site (www.ldt-infocenter.com) at the section "Downloads" and "Sample Connections". Beside the single sample-connections we recommend the file "**rmdec_info_engl**" at the section "Downloads".

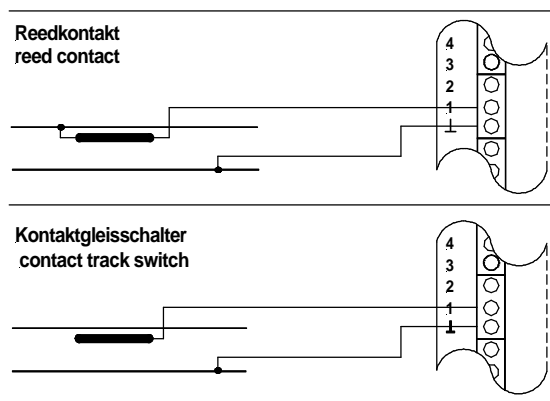
The 16 inputs of the **feedback module RM-DEC-88-O** are very good protected against electrical interferences.

Nevertheless in case it will come to some interferences the reason will be mostly by very long and narrow installed wirings between the contacts. It can even come to some signal transfer between two wires. Although only one section is actually occupied some more sections can be reported to be occupied.

This can be avoided by using **suppress- or decoupling diodes** before the single feedback inputs. A sample wiring can be found on our web-site at the section "**Sample Connections**".

2. Two-rail conductor system:

If you use **reed contacts** for feedback signals on your layout please install the wiring to the feedback decoder **RM-DEC-88-O** as shown at the below circuit.



Up to now model-railroader using Märklin-Digital= or Arnold-Digital systems could not use the usual **contact-rail switches (e.g. Arnold 7440)** for feedback purposes.

The **RM-DEC-88-O** is equipped with **opto coupling** inputs to guarantee sufficient potential separation.

Therefore a direct connection of **contacts-rail switches** and **non-potential-free track occupancy devices** to the feedback module is now possible (see lower figure above).

At the shown example the ^ clamp of the feedback module **RM-DEC-88-O** is connected to one pole (lower rail) of the digital voltage.

The metallic wheel of a passing loc or coach will switch an electrical connection of the digital voltage via the contact-rail-switch to the second terminal (upper rail).

Even the shortest switch impulses will be transferred from the feedback module as they will be stored until the control unit will request this information via the feedback bus.

Feedback modules from our **Digital-Professional-Series** are easy to use with your digital model railroad, as they **are 100% compatible** with the s88 feedback bus.

Accessories:

For safe **installation** of the pc-board below your model layout we offer an **installation set** under the order code **MON-SET** and a stable exact matching **case** (order code: **LDT-01**).

Further products from our Digital-Professional-Series:

RM-GB-8

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

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