Massoth®


# DiMAX® 810K

## Reverse Loop Module 8157001

**Version 1.0 – 04/08**

## 1 Brief description

Reversing loops and wye junctions inescapably produce a short circuit at the entry or exit points. Therefore these arrangements require to be electrically isolated at the entry and exit points. To facilitate a reversing loop operation a module is required to take care of the polarization of the loop section.

It is essential, that the isolated track section is longer than the longest train on the layout with cars that are equipped with power pick-ups or metal wheels.

In case only cars with plastic wheels are used, the maximum length of the loop section may be reduced to the length of the longest locomotive on the layout.

In case cars with metal wheels or wheels with a power pick-up are used, the length of the loop must accommodate the whole train. Each metal wheel bridges the disconnecting points when passing. Bridging both the disconnecting points at the entry point and the exit point at the same time will result in a short circuit condition that even the reverse loop module is unable to handle.

Most modules available on the model railroad market work with a short circuit detection. A train entering the reverse loop shorts the track power which is detected by a module. This module subsequently changes the polarity of the isolated loop thus resolving the short circuit condition as the train continues.

This method has several drawbacks. The burn-off on the wheels and the track at the disconnecting points is extensive due to the recurring shorts. In case multiple reversing loops are operated on the same power supply all modules detect a short and subsequently switch the polarity at the same time. So only one train at a time is allowed in a reversing loop. The remaining reversing loops cannot be used at the same time.

### 1.1 Basic functions of the module

The DiMAX-reverse loop module features several operating modes:

- With additional sensor tracks installed, the module operates without any short circuits. The DiMAX reverse loop module detects the polarisation of the entering train and adjusts the polarity of the reversing loop section accordingly before the train enters the loop.
- Alternatively the module may be used with the common short circuit detection. This requires less wiring however the burn-off on the wheels and the track is increased significantly.
- A mixed operation with sensor tracks and short circuit detection is available. In case a sensor track does not work properly due to contaminated or corroded tracks, the short circuit detection will provide a correct operation at all times. The short circuit detection may be turned on/off with a jumper inside the module.
- A reliable operation of the module is guaranteed at all times as two separate switching relais are utilized. Even if a train bridges a disconnecting point when the system is switched on, the module will adjust to the correct polarization. In this case the loop section will be powered up with a slight delay to the main layout.
- The module may be operated in analog layouts as well, utilizing an additional separate power supply. However, in analog operation no train must bridge a disconnecting point when the system is switched on.

### 1.2 Scope of supply

**- DiMAX® 810K reverse loop module**
**- Kit for 4 sensor tracks**
**- Manual**

In case one of the items listed above is damaged or missing, please contact your dealer or the manufacturer directly.

## 2 Hook-Up and Operation

- The waterproofness of the module is limited. The sensitive electronic components are sealed waterproof, however the terminals and contacts may be damaged by moisture and humidity. The module should be placed in a protected and dry environment (e.g. a model house). Major temperature variations may cause condensed water which may result in damage to the module.
- Keep the sensor tracks and the disconnecting points clean at all times, especially during outdoor operation. Contamination of the disconnecting points may result in creeping current and subsequently in malfunction of the module. To improve operation the diodes provided with the module may be placed in the sensor lines (see Illustration 3).
- The module must only be connected to components described in this manual. Connecting this unit to other components even if the plugs are matching may result in serious damage to the module or other components.
- **Delivery status: Jumper opened for Short circuit-detection**
- This module is not a toy!

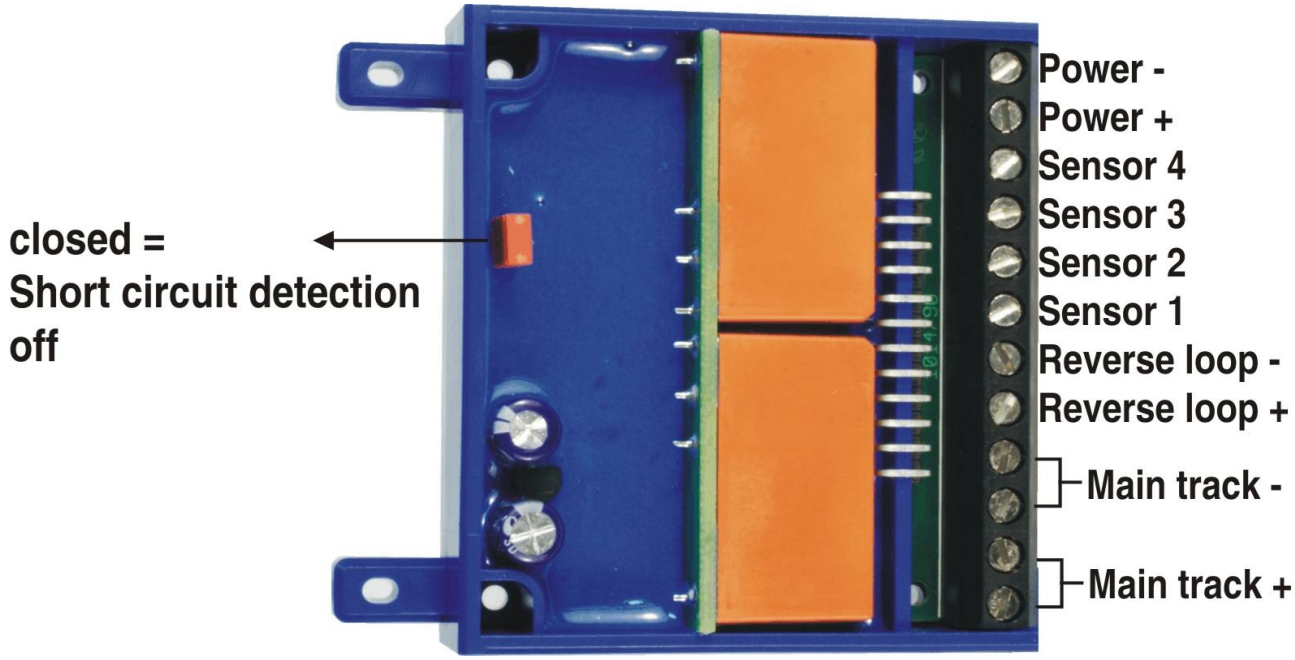


*Illustration 1: Contact allocation*

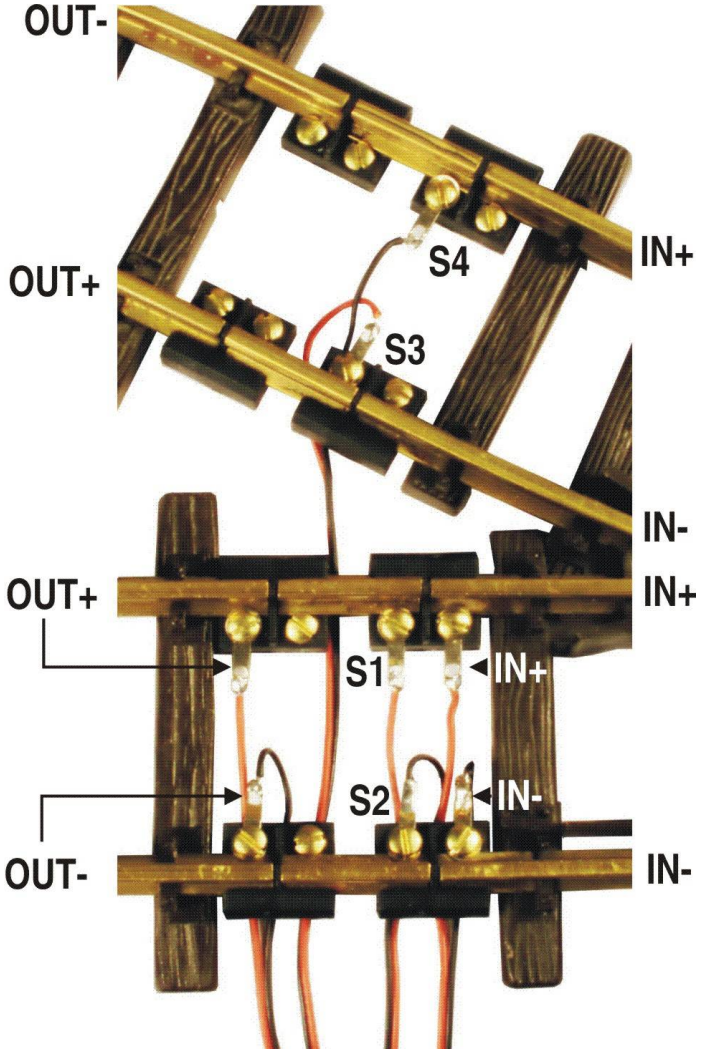


*Illustration 2: Sensor track installation*

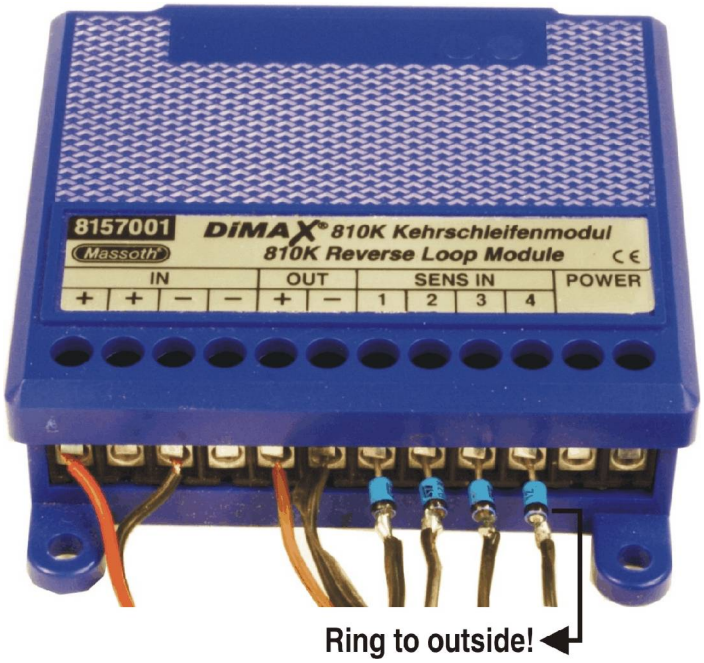


*Illustration 3: Diode installation for improved operation*

### 2.1 Short circuit free digital reverse loop with sensor tracks

Install the sensor track components according to the wiring and installation diagram (Illustration 4). Make sure the hook-up is done correctly to ensure a proper operation. In case the jumper is removed (Illustration 1), the short circuit detection is activated additionally. Operating multiple reverse loop modules at the same time requires the jumper to be set (short circuit recognition deactivated).

Track contacts (reed contacts) may be utilized instead of the sensor tracks. This may improve the interference resistance but requires a magnet under each locomotive.

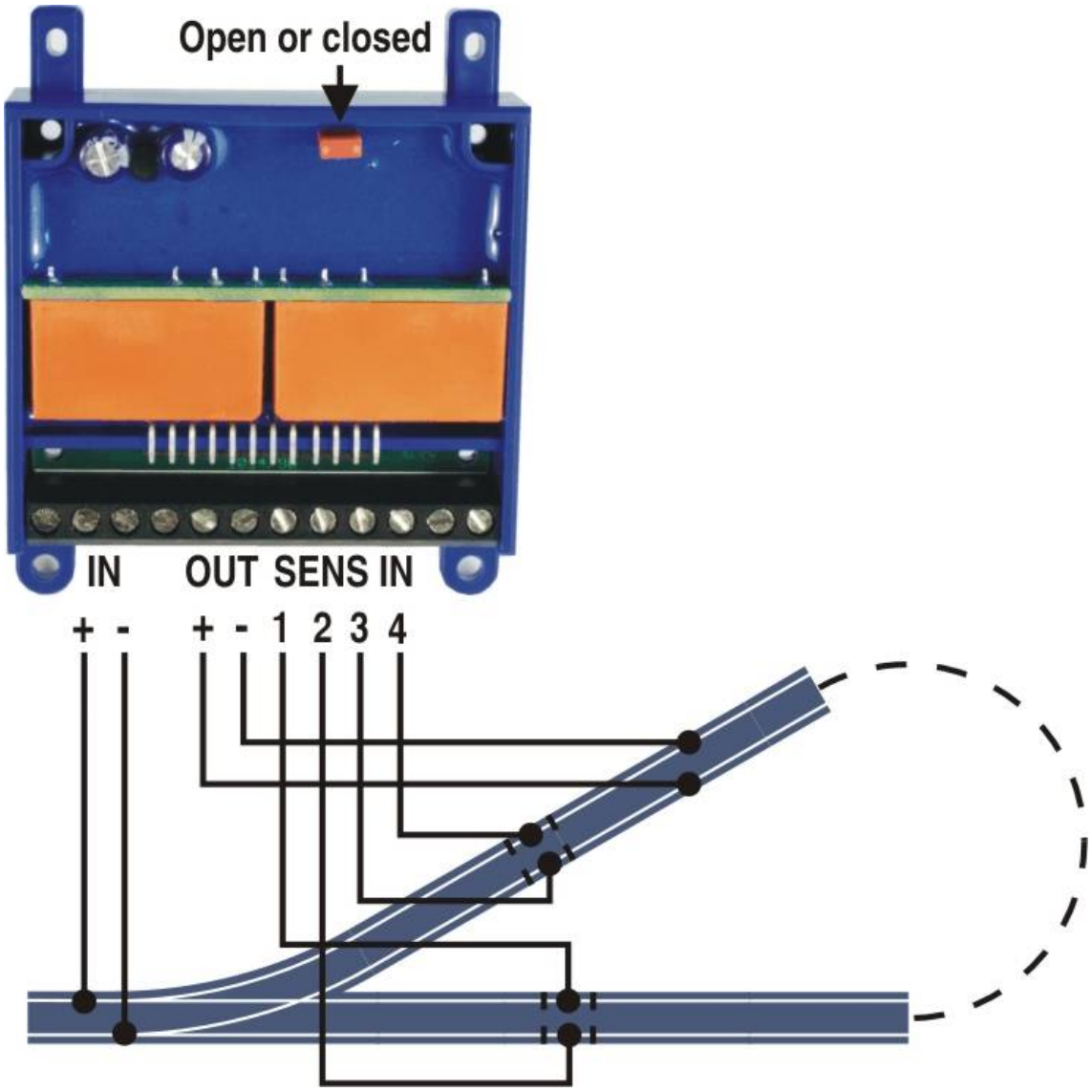


*Illustration 4: Digital reverse loop with sensor tracks*

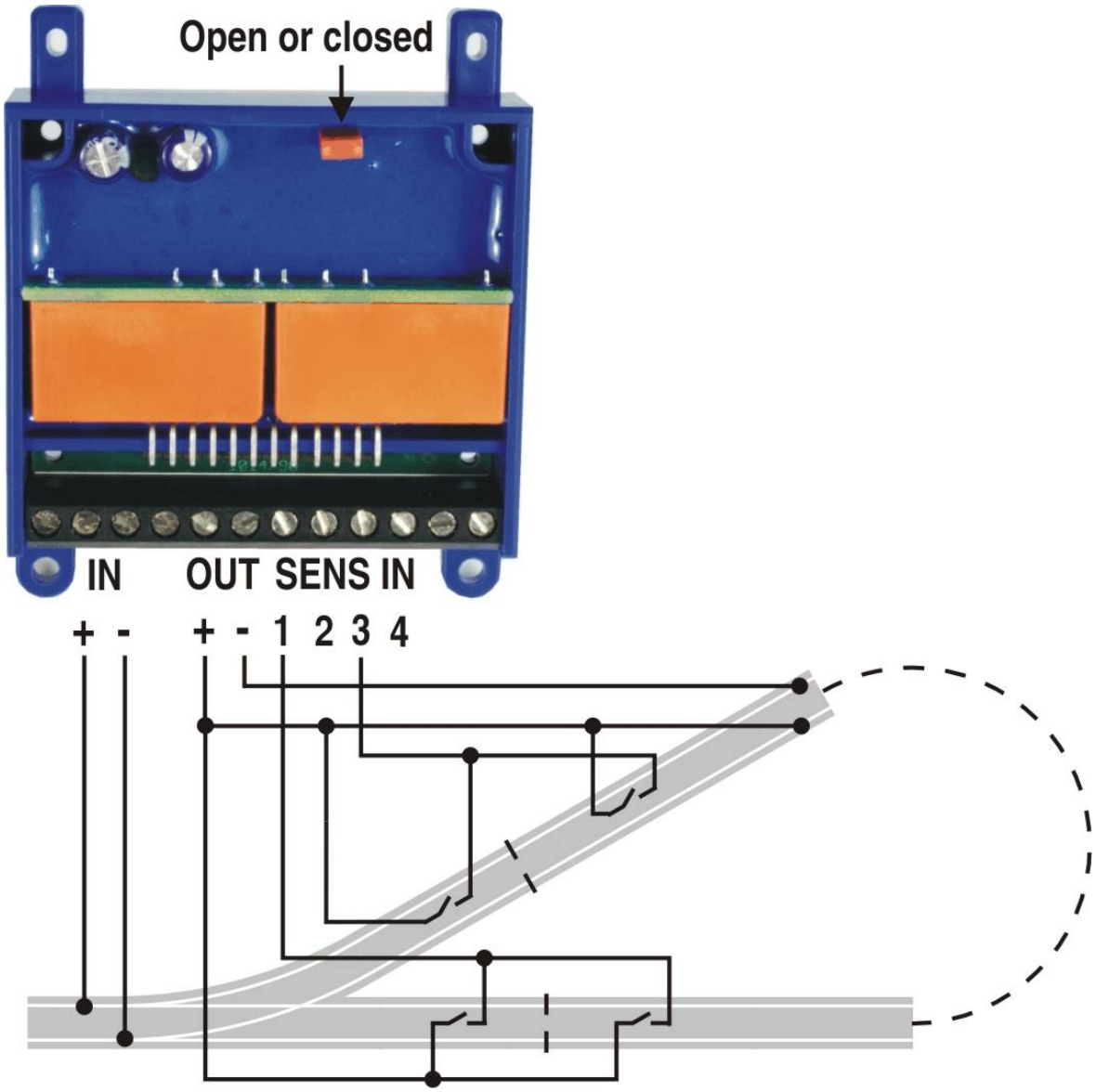


*Illustration 5: Digital reverse loop with track contacts*

## 2.2 Digital reverse loops with short circuit detection

This mode requires the reverse loop section to be completely isolated from the main layout at the entry and exit points. Hook up the module according to the wiring diagram. Please note that this operation results in a higher burn off at the wheels and the tracks. Operating multiple reverse loops in one layout rquires that only one loop at a time may be used.

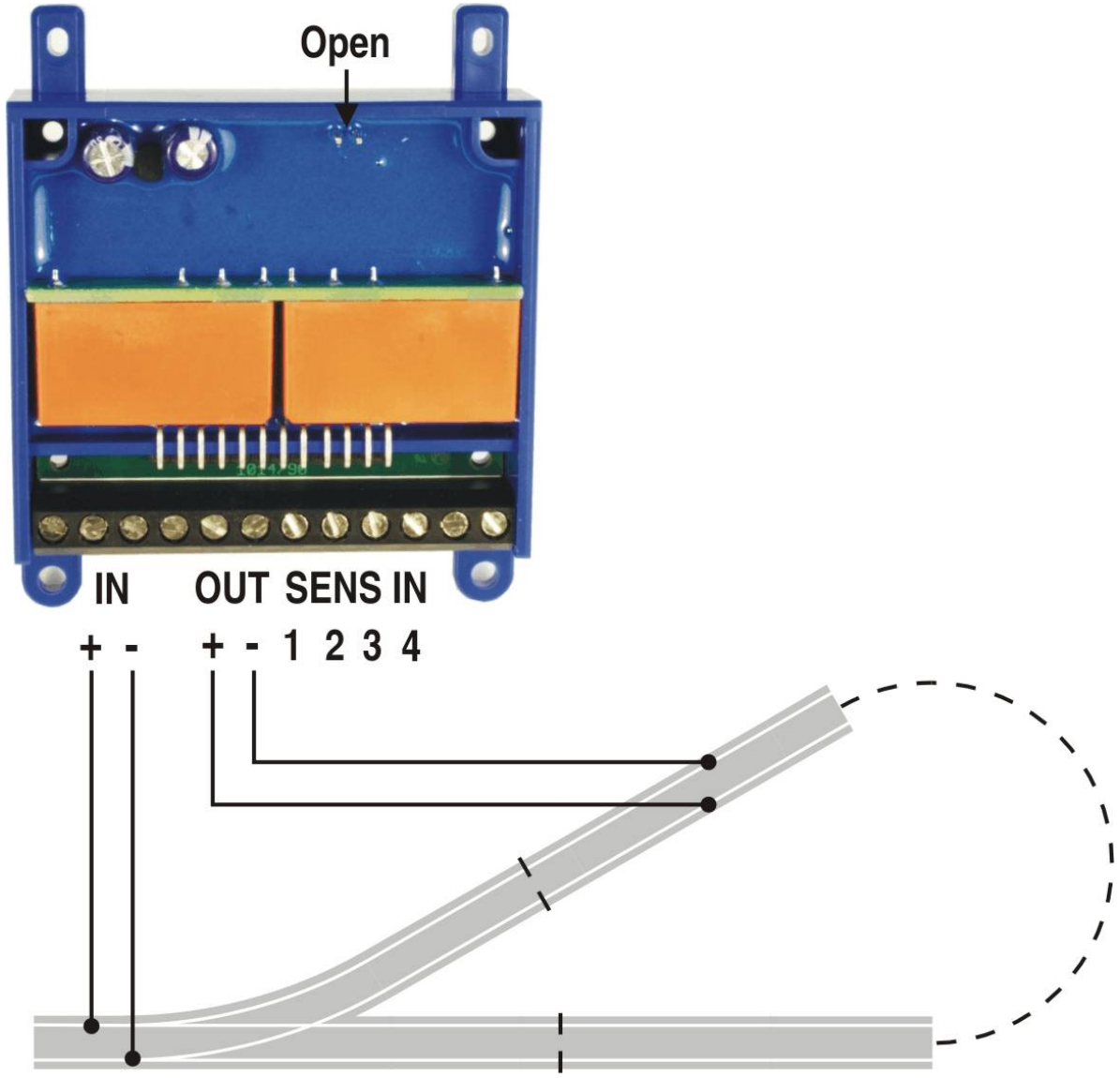


*Illustration 6: Digital reverse loop with short circuit detection*

### 2.3 Digital wye (triangular) junction

A wye junction also causes a short circuit. Therefore one side of the triangle must provide an electrically isolated section. The choice of operation is with sensor tracks or short circuit detection. Please check the first two examples of the reverse loop for further information.

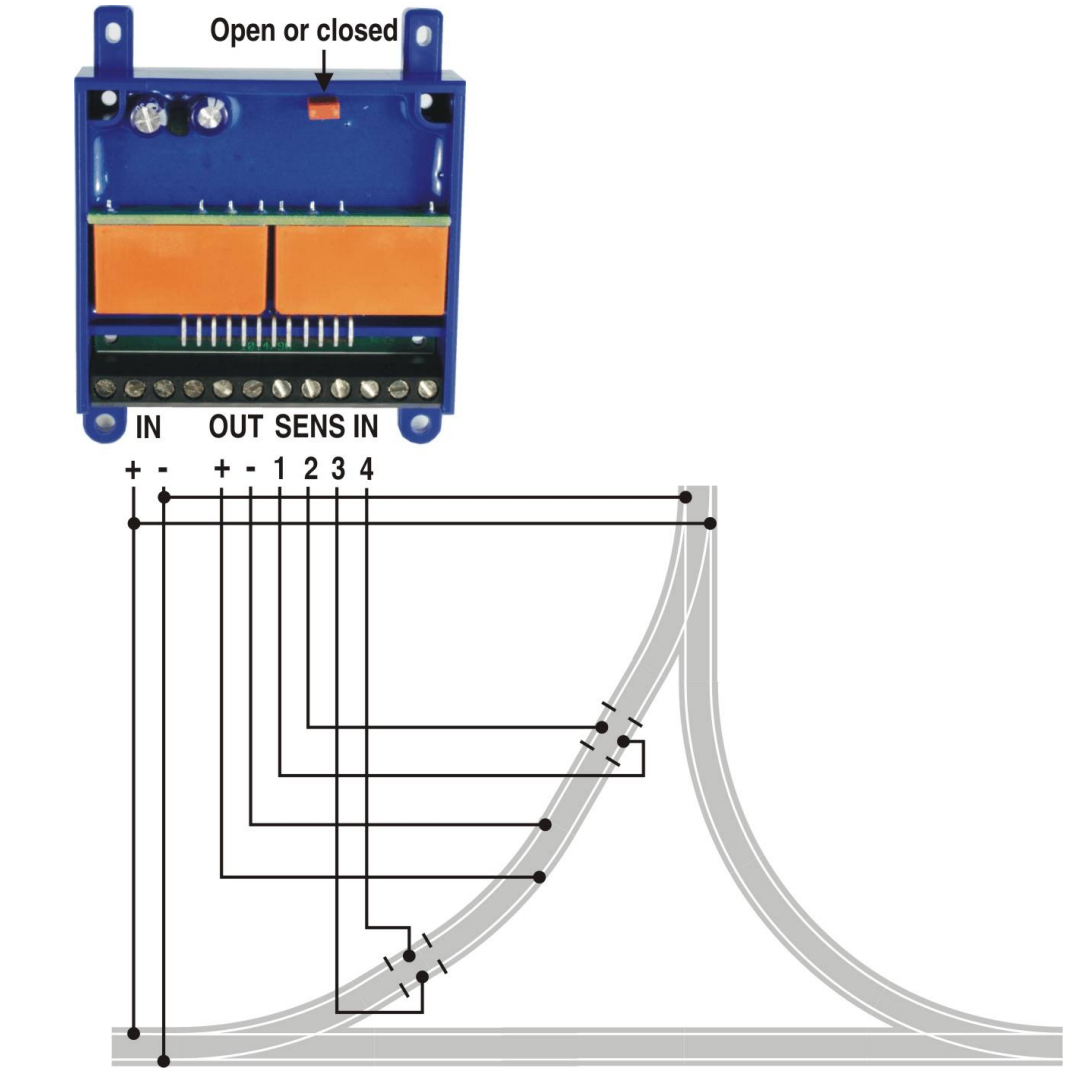


*Illustration 7: Digital wye junction with sensor tracks*

## 2.4 Analog reverse loop :

The analog reverse loop reverses the main track polarity instead of the loop polarity. For an automatic operation however a few details have to be observed. A seperate power supply is required to power the module (14 – 24 V DC). A minimum driving voltage of 5 Volts is required to ensure a safe sensor operation. Additional diodes must not be used. The reverse loop must always be operated in the same direction. Alternatively the use of track contacts instead of sensor tracks is possible.

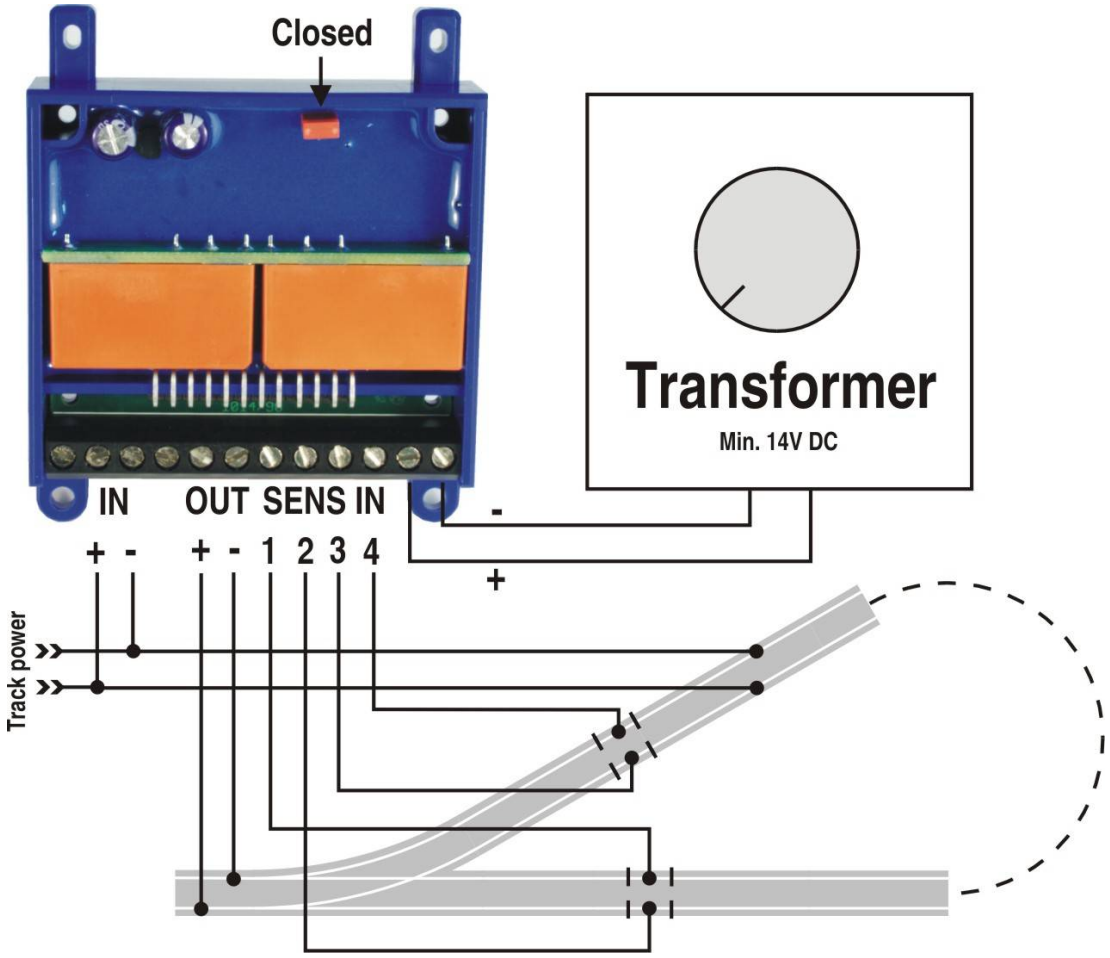


*Illustration 8: Analog reverse loop with sensor tracks*

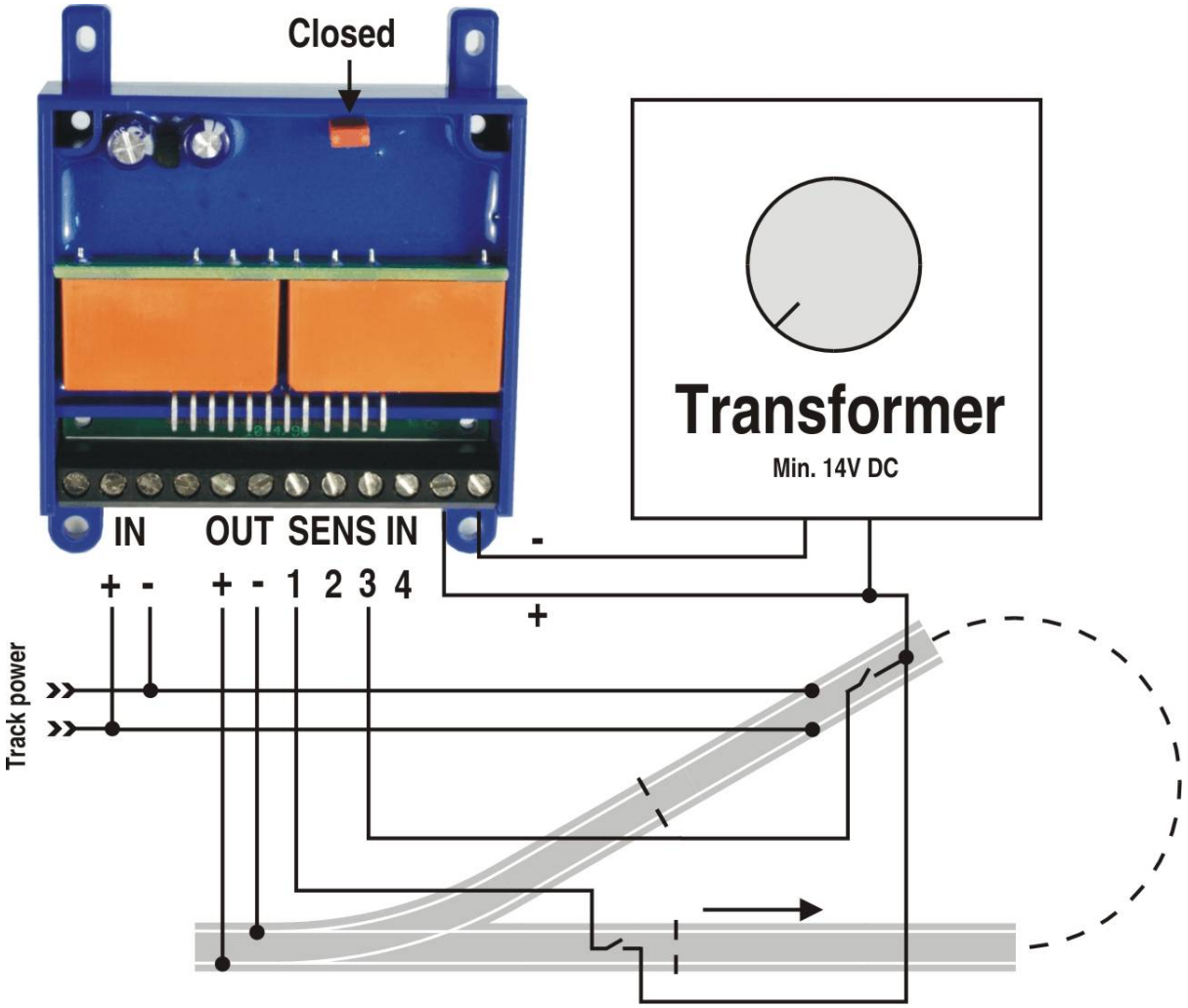


*Illustration 9: Analog reverse loop with track contacts*

**3 Technical Data**

Power Supply:

- Track voltage: 0-27 Volts (DC=), 14-27 Volts (Digital voltage)
- Helping voltage in Analogue mode : 14-27 Volts (DC=)
- Maximum Switching current : 8 Amps continuous (16 Amps momentary)

Current Drain:

- maximum module current drain: appr. 50mAmps

Operating Temperature:

- 45 F…122 F
- Do not to install the feedback module in a moist and humid location as this will result in the production of condensed water.

## 4 Important Notice

The DiMAX 810K reverse loop module is designed for indoor use only. Do not expose to shock or pressure. Avoid smashing or squeezing the cables.

### 4.1 Moisture/ Humidity

The housing of the DiMAX feedback module is protected from splashed water. However, it is not waterproof. This is the reason why this module must only be operated in a dry environment. Protect the module from moisture, humidity, and water. Moisture / humidity may
limit the functionality significantly or may destroy the unit.

### 4.2 Warranty

Massoth Electronics USA warrants this product for 1 year from the date of purchase. This product is warranted against defects in materials and workmanship. Peripheral component damage is not covered by this warranty. Normal wear and tear, consumer modifications as well as improper use or installation are not covered. Errors and changes excepted.

### 4.3 Warranty Claims

Valid warranty claims will be serviced without charge within the warranty period. To initiate a warranty claim please contact your dealer or Massoth Electronics USA for an RMA (return merchandise authorization). Massoth Electronics USA cannot be responsible for return shipping charges to our repair facility. Please include your proof of purchase with the returned goods.

### 4.4 General and Safety Details

This is not a toy. Not suitable for children under the age of 8 years. This product may have sharp corners and edges and may be harmful if swallowed. Handling the item may cause restraint injuries. If not trained properly do not handle this product; have a professional install this item. Operate this product only with products posted in this manual. Electrical data and measurements are subject to change without prior notice.

| | |
|---|---|
| CE | This product conforms to the CE standards |
| **RoHS** | This product is manufactured according to the latest EG Standards for lead free manufacturing conforming to RoHS standard. |
|  | Please dispose of according to your State regulations. |
|  | Do not dispose of in open fire. |

### 4.5 Support

Please visit www.massoth.com. Here, the latest software and manuals are provided. For further support and detailed technical questions you may contact your dealer or the manufacturer at (email) sales@massoth.com .

Hotline hours USA: 9:00 a.m. to 4:00 p.m. EST Mo thru Fr

Phone: 770 – 886 – 6670
FAX: 770 – 889 – 6837

### 4.6 Manufacturer Information

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