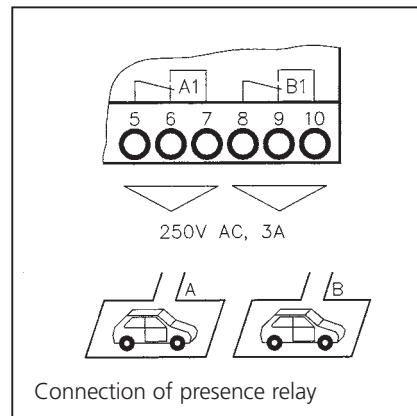
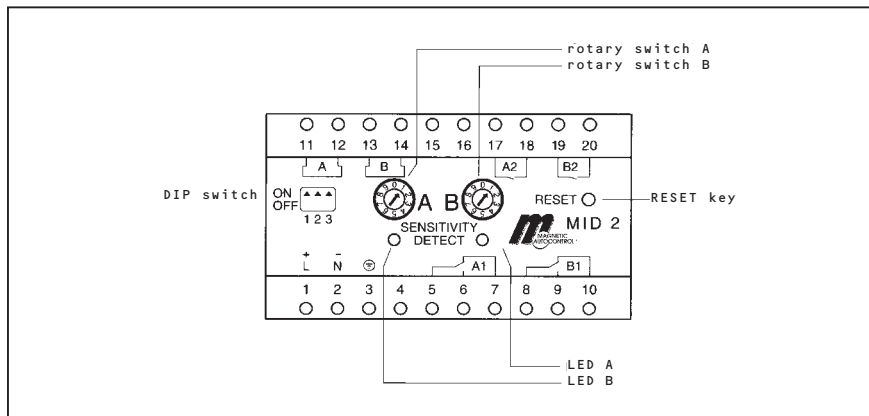


adjustment

MID 2 control unit



1.) Application areas

The MID 2 detector is used for

- registration
- counting
- direction-detection of vehicles (bicycles, cars, fork lifts, trucks, busses)

Concrete areas of application include:

- barrier control systems
- gate control systems
- car wash control systems
- signal lamp systems
- parking garages
- industrial facilities
- etc.

2.) Principle of operation

A wire loop with several windings is installed in the traffic lane. The inductivity of the loop changes depending on whether or not a vehicle (= metal object) is situated on the loop. This change in inductivity is evaluated by the detector.

The two-channel detector can evaluate two of these loops. These loops are scanned in succession so that they cannot influence one another.

The balancing of a channel caused by a vehicle is displayed by the proper LED. At the same time, the corresponding presence relay (A 1 or B 1) is activated.

As soon as the vehicle leaves the loop, the LED goes out and the presence relay is deactivated.

The proper multifunction relay (A 2 or B 2) is activated according to the previously set mode of operation.

3.) Installation

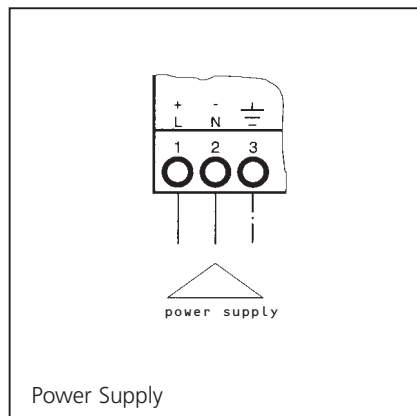
3.1) Assembly: Snap detector into place on the DIN EN 50022-35 top-hat rail.

3.2) Mains connection

3.2.1) Operation using alternating current (115 V AC, 230/240 V AC)

The mains connection must be provided as follows:

- Terminal 1 = L
- Terminal 2 = N
- Terminal 3 = PE



Installation work must be carried out by qualified personnel!

3.2.2) Operation using direct current (12 V DC, 24 V DC)

The direct-current connection must be provided as follows:

- Terminal 1 = +
- Terminal 2 = -
- Terminal 3 = not assigned

3.3) Connection of presence relay

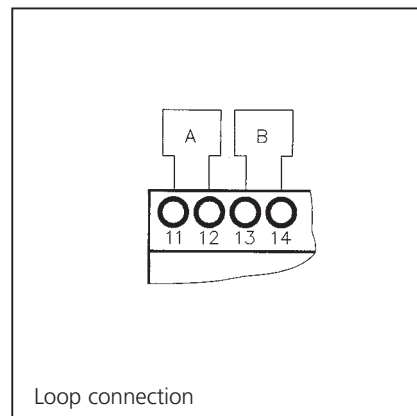
The relay contacts of the presence relays are brought out potential-free to the terminals:

Channel A (Relay A 1):

- Terminal 5 = common
- Terminal 6 = make contact (closes when a vehicle is on the loop)
- Terminal 7 = break contact (opens when a vehicle is on the loop)

Channel B (Relay B 1):

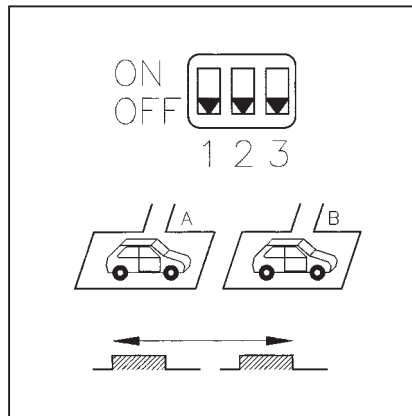
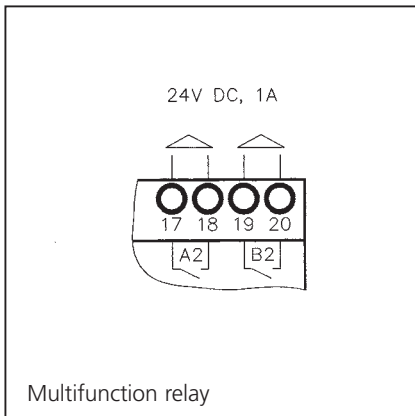
- Terminal 8 = common
 - Terminal 9 = make contact
 - Terminal 10 = break contact
- The change-over contacts can be subjected to a load of 250 V AC / 3 A.



3.4) Loop connection

The loop for channel A must be connected to terminals 11 and 12, and the loop for channel B must be connected to terminals 13 and 14. The supply conductors to the detector must be transposed.

The inductivity of the loop must be between 70 μ H and 1000 μ H.



- Pulse contact (300 ms), as soon as a vehicle drives away from one of the two loops.
- Relay A2 switches on for 300 ms when a vehicle drives away from loop A.
- Relay B2 switches on for 300 ms when a vehicle drives away from loop B.

4.2) Direction detection

The two relays operate together, i.e. the driving direction of a vehicle is detected and evaluated accordingly (A → B or B → A). This is possible only if DIP switch 1 is in the "ON" position.

3.5) Connection of the multifunction relays

The two multifunction relays have make contacts. They are brought out potential-free to the terminals:

Channel A (relay A2): Contact brought out on terminals 17 and 18.

Channel B (relay B2): Contact brought out on terminals 19 and 20.

The make contacts can be subjected to a load of 24 V DC, 1 A.

4.) Adjusting the types of operation for relays A2, B2

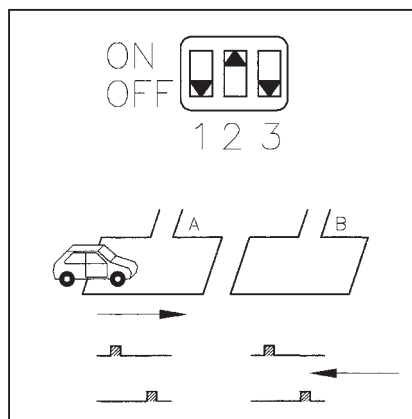
The multifunction relays A2 or B2 can be set to various types of operation.

They may be operated as a pulse relay or as an additional presence relay for the two channels A and B. In addition, the two relays can be operated independently from one another, or they can be used together for direction detection of vehicles. Three DIP switches on the front plate are used to adjust the various modes of operation. These switches are numbered from 1 to 3.

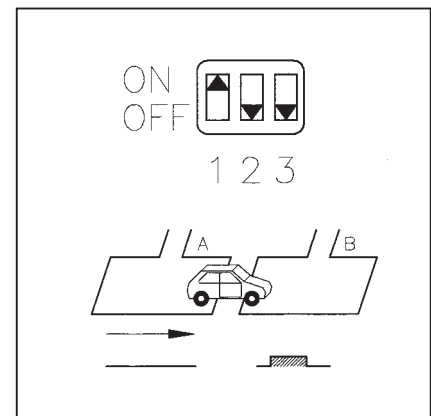
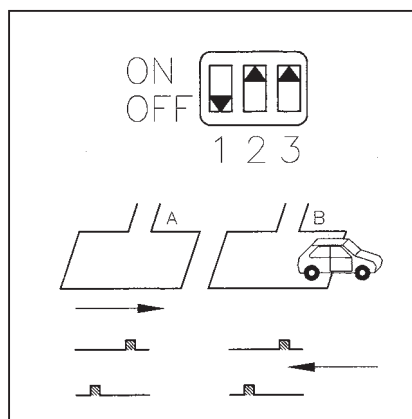
4.1) 2-channel operation

The two relays operate independently from one another, i.e. a vehicle can be detected on each of the two loops. This is possible only when DIP switch 1 is in the "OFF" position.

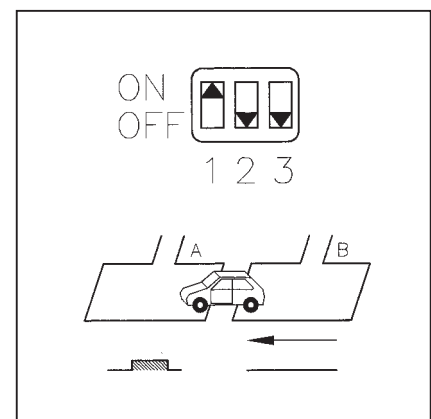
- Maintained contact, as long as a vehicle is on one of the two loops.
- Relay A2 switched on, as long as a vehicle is on loop A.
- Relay B2 switched on, as long as a vehicle is on loop B.



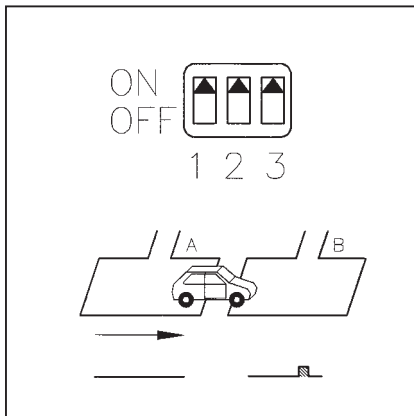
- Pulse contact (300 ms), as soon as a vehicle enters one of the two loops.
- Relay A2 switches on for 300 ms, when a vehicle enters loop A.
- Relay B2 switches on for 300 ms, when a vehicle enters loop B.



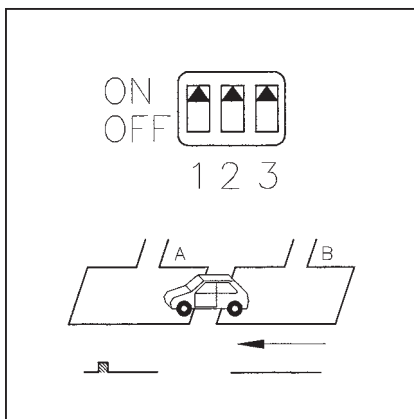
- When a vehicle drives from loop A to loop B, relay B2 is switched on.
- Relay B2 remains switched on, as long as the vehicle is on loop B (maintained contact).



- When a vehicle drives from loop B to loop A, relay A2 is switched on.
- Relay A2 remains switched on, as long as the vehicle is on loop A (maintained contact).



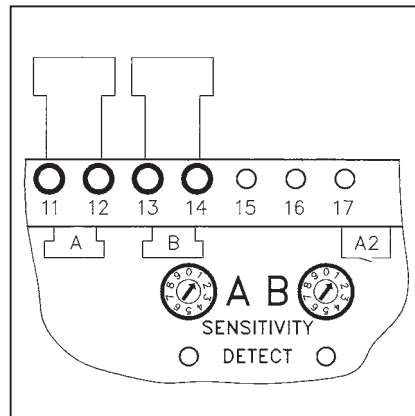
- When a vehicle drives from loop A to loop B, relay B2 is switched on for a short time (pulse contact 300 ms)



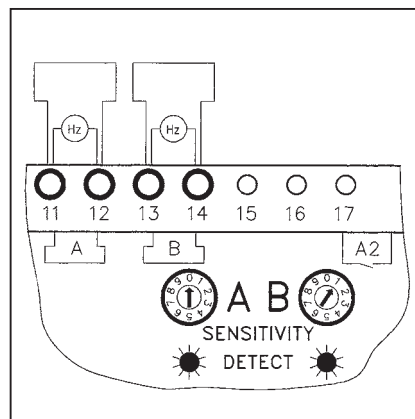
- When a vehicle drives from loop B to loop A, relay A2 is switched on for a short time (pulse contact 300 ms).

4.3) Adjustment of the sensitivity

The response sensitivity at which a vehicle is detected can be adjusted separately for each channel at 9 levels. The adjustment is made using the two rotary switches on the front plate. Position "9" corresponds to the highest level of sensitivity and position "1" to the lowest level of sensitivity. Position "0" is reserved for the measurement of the loop frequencies and cannot be used for the sensitivity adjustments (also see item 4.4).



4.4) Measuring of the loop frequency

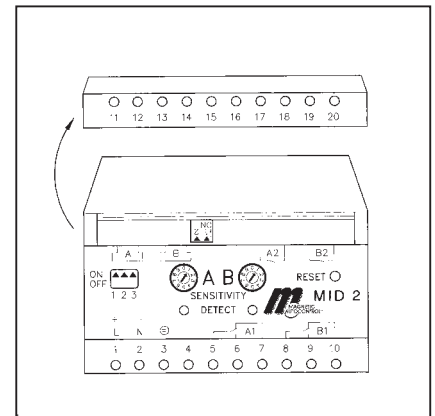


During regular detector operation, the frequencies of the two connected loops cannot be measured, since only one of the two channels is active at a time. However, in order to be able to measure the frequency of the two channels, the switch position "0" of the two rotary switches for sensitivity adjustments has been reserved for this purpose.

When one of the two rotary switches is turned to position "0", the corresponding channel is switched on permanently and the other channel is switched off (when both switches are on position "0", channel A is active). The frequency of the corresponding loop can then be measured without any problems using a frequency meter.

For the measurement of channel A, the frequency meter must be connected parallel to terminals 11 and 12 and to terminals 13 and 14 for the measurement of channel B.

During the frequency measurement, the two LEDs are flashing alternately. The detector is not operational during this time! Following the frequency measurement, the detector balancing operation must be carried out again (press "RESET" key).



5.) Adjustment of the frequency

The adjustment of the loop frequencies is made using the two DIP switches on the processor circuit board. To make the adjustment, terminal strip 11 – 20 must be removed.

The two channels can be set independently from one another to two different frequencies:

Position off: (FH) High frequency
on: (FL) low frequency

Switch 2 is assigned to channel A and switch 1 to channel B.

Frequency switch-over is required whenever the loops of two adjacent MID 2 units interfere with one another. One detector can then be set to position "FL" and the other one to position "FH", so that the adjacent loops operate at different frequencies. When only one detector is used, the frequency adjustment is not important, since the two loops cannot influence one another.

Whenever the frequency is changed, a detector balancing operation must be carried out again (press "RESET" key).

6.) Putting the unit into operation

- Select frequency range (FH or FL)
- Set sensitivity to "min."
- Set desired type of operation for the pulse relays A2, B2
- Remove metal objects (vehicles, tools, etc.) from the loop area
- Switch on the operating voltage

The detector begins with the balancing operation. During the balancing operation, the LEDs flash with decreasing frequency. Following the balancing operation, the LEDs go out.

During the balancing phase, the detector performs a loop test. Accordingly, the loop is checked to determine if it is within the permissible inductivity range or if a loop interruption or loop short-circuit has occurred. In case of error detection, the LED of the corresponding channel will flash continuously in 1-Hz cycles.

7. Malfunctions	Possible cause	Corrective measure
Vehicle is not detected	Sensitivity adjusted too low	Set DIP switches to higher value
	Operating voltage missing	Check connection
	Fuses defective	Replace
Detector detects all kinds of metall objects	Sensitivity adjusted too high	Set DIP switches to lower value
Adjacent detectors are interfering with one another	Detectors are operating on the same frequency	Set different frequencies (FL/FH)
LED is flashing in 1-Hz cycles	Inductivity beyond permissible range	Adapt loop geometry / winding number
	Loop has an interruption or short circuit	Check loop and supply line
LEDs are flashing alternately	At least one of the two rotary switches is on position "0" (frequency measurement)	Turn rotary switch to position "1...9" and press RESET keyw