Viessmann®

CAR motion

Revolutionary technology

Motorised road vehicles from Viessmann

Inductive charging

Innovation, in motion!

Editorial

Viessmann is elevating the operation of track-guided road vehicles to new heights! The intelligence is located primarily within the vehicles themselves!

The modern and durable motor of these vehicles results in extended operational times per battery charge, while the distance control, in conjunction with the sophisticated engine regulation, enables an exceptionally realistic driving experience. The motor is situated within the chassis of the vehicles, while the battery is located in the cab. You can see inside the cab, it is equipped with a driver, and illuminated. The loading area is free for individual configurations. The control systems within the vehicles are capable of autonomously executing a wide range of functions. Additionally, you have numerous intervention options, which we will introduce to you in this brochure.

Viessmann vehicles can operate on both steel wire and Viessmann magnetic tape. To operate on road sections made from the Vollmer Stone Art assortment, the use of magnetic tape is required. This method rewards users with an exceptionally realistic, wear-resistant and robust road surface.

Explore the utilization possibilities of the CarMotion system in three stages, which can seamlessly transition into one another.

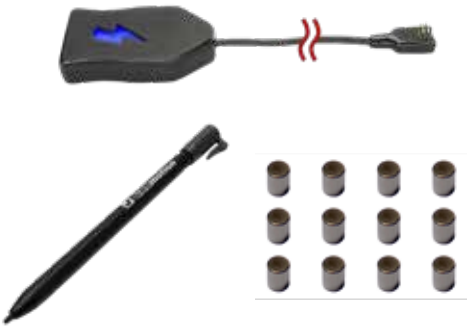
Compatibility with existing systems is provided in various domains, enabling the deployment of CarMotion vehicles in those areas.

The circuit board serves as chassis.

The fleet at a glance

Starter sets

All starter sets consisting of one vehicle, one charger with USB charging cable, item 8400, 12 permanent magnets, item 8431 and one magnetic bar.



8000 H0

CarMotion basic starter set, MB ACTROS dump truck with rotating flashing lights, blue

8001 H0

CarMotion basic starter set, MB ACTROS dump truck with rotating flashing lights, red

8002 H0

CarMotion basic starter set, MAGIRUS DEUTZ 3-axle dump truck

8003 H0

CarMotion basic starter set, MB round bonnet 3-axle dump truck

MB Actros and matching trailers/semi-trailers

8010 HO

MB ACTROS 3-axle dump truck with rotating flashing lights, basic

8210 HO

2-axle dump trailer

8011 HO

MB ACTROS 3-axle articulate truck with rotating flashing lights, basic

8211 HO

MEILLER Tipper semitrailer MHKS 40/2

8014 HO

MB ACTROS 3-axle dump truck with rotating flashing lights, red, basic

8214 HO

Tandem tipper, red

8015 HO

MB ACTROS 3-axle dump truck with rotating flashing lights, yellow, basic

8215 HO

2-axle dump trailer, yellow

8030 HO

MB ACTROS 3-axle articulate truck, basic

8230 HO

MB ACTROS 2-axle concrete mixer semitrailer

8023 HO

MB ACTROS 3-axle tractor with loading crane and rotating flashing lights, basic

8031 HO

MB ACTROS 3-axle concrete mixer truck with rotating flashing lights, basic

8032 H0

MB ACTROS 3-axle tractor with concrete parts, rotating flashing lights, basic

8033 H0

MB ACTROS 3-axle tractor with ARAL tanker semitrailer, basic

8050 H0

Fire brigade MB ACTROS 3-axle with roll-off container and rotating flashing lights, basic

8053 H0

Fire brigade MB ACTROS 3-axle skip loader with rotating flashing lights, basic

8070 H0

THW MB ACTROS 3-axle with roll-off container and rotating flashing lights, basic

MAGIRUS DEUTZ and matching trailers/semitrailers

8012 H0

MAGIRUS DEUTZ 3-axle articulate truck, basic

8212 H0

MEILLER Tipper semitrailer MDKS 28/2

8013 H0

MAGIRUS DEUTZ 3-axle square bonnet with concrete, mixer semitrailer, basic

8018 H0

MAGIRUS DEUTZ 3-axle dump truck, basic

8021 H0

MAGIRUS DEUTZ 3-axle recovery crane with rotating flashing lights, basic

8051 H0

Fire brigade MAGIRUS DEUTZ 3-axle recovery crane, basic

8054 H0

Fire brigade MAGIRUS JUPITER 3-axle with tipper, tarpaulin, rotating flashing lights, basic

8071 H0

THW MAGIRUS DEUTZ 3-axle recovery crane, basic

Round bonnets and matching trailers/semitrailers

8016 H0

MB round bonnet 3-axle articulate truck, basic

8216 H0

MEILLER Tipper semitrailer MHKS 40/2

8017 H0

MB round bonnet 3-axle concrete mixer truck, basic

8019 H0

MB round bonnet 3-axle recovery crane with rotating flashing lights, basic

8020 H0

MB round bonnet 3-axle dump truck, basic

8022 H0

MB Rundhauber 3-achs Bergekran mit Rundumleuchten, Basis

8052 H0

Fire brigade MB round bonnet 3-axle recovery crane with rotating flashing lights, basic

8072 H0

THW MB round bonnet 3-axle recovery crane with rotating flashing lights

8034 H0

MB round bonnet 3-axle with ARAL tanker semitrailer, basic, functional model

8035 H0

MB round bonnet 3-axle with charcoal vessel UNION, basic

8036 H0

MB Round bonnet 3-axle with long log truck, basic

Traffic control from Viessmann – or you drive as you like!

Basic level – no wiring, no additional electronics required

A Viessmann CarMotion vehicle offers a highly diverse driving experience right from the factory, featuring light effects and speed variations that can be executed both distance and time-based, all triggered by a few small magnets embedded in the track.

CarMotion vehicles are equipped with a magnetic field sensor, known as the Hall sensor, capable of detecting magnets embedded in the track. Up to three consecutive magnets are analyzed. These magnetic sequences are associated with specific actions within the vehicle, which it autonomously performs upon recognizing the magnetic sequence. These command sequences are stored as “macros”.

Furthermore, you can conveniently configure these macros according to your requirements using a small programming device and a user-friendly software known as the CarManager on your PC.

Moreover, you have the ability to directly control the vehicles using a small infrared remote control: initiating light effects, altering speeds, stopping and resuming vehicle motion, or even turning them off. Infrared communication between the vehicles ensures reliable distance control of the vehicles.

Special emphasis has been placed on achieving realistic driving behaviour. If you have two or more vehicles on a track, you can also adjust this driving dynamics according to whether your layout is tight and twisty or contains faster sections.

Passing a stationary vehicle is also possible because you can assign a different lane to the vehicles through a sequence of magnets, for example, for passing by a petrol station or bus stop, etc.

Existing stop coils, if present, are also considered.

Why not experiment with magnets yourself? You do not have to drill any holes initially. Affix the magnets horizontally onto small cardboard cards and position them close to the lane. Use, for instance, the south pole of a magnet to initiate the braking process. At the end of the braking ramp, place the north pole of another magnet. You will observe that the vehicle decelerates and comes to a stop in a prototypical manner.

If the braking distance is too long for your layout or if the vehicle needs to continue after a few seconds of waiting, use the CarManager to conveniently adjust the braking distance and waiting time!

Thanks to the configurable macros invoked by the magnetic sequences (see page 9), a diverse range of operations is readily achievable. It is even possible to render magnetic sequences “mechanically switchable”. The same principle

applies to turnouts – Viessmann's turnouts can be adjusted manually or by a motor.

On our website, we have provided an exemplary suggestion. Further recommendations can be found across various forums or on social media platforms.

Naturally, prototypical braking also operates seamlessly with electric stop coils.

Professional level – infrared transmitters and receivers, traffic lights, intersection, turnouts and inductive charging

The autonomy of driving

As demonstrated in the preceding chapter, the vehicles possess a degree of intelligence to autonomously navigate, without which the vehicles cannot manage:

- Simple intersections
- Pedestrial traffic lights

Here, control modules are employed, which influence the vehicles accordingly and assume coordination through infrared signals.

We utilize three infrared modules and one inductive module, each possessing varying degrees of capabilities.

The transition from the basic level to the professional level can occur incrementally, as both systems can be used in parallel.

For instance, you can install your first IR Mini on a Viessmann traffic light items 5094 and 5095, and revel in the prototypical stopping of the vehicles.

Gradually, you can proceed to set up additional, even more complex scenarios, such as intersections. This may require additional measures at times, such as Hall sensors placed beneath the road surface.

The comprehensive solution

The magnets resp. the magnetic sequences, and the IR modules complement each other advantageously. Wherever commands must always be executed, magnetic sequences are recommended, and where commands need to be invoked situationally or vehicle-dependent, infrared technology is recommended.

Despite the differences in these technologies, transmission itself is not visible in either case. Therefore, all vehicles are equipped with a feature that greatly facilitates the installation of these components. Both magnetic fields and infrared signals have a test mode on the vehicles. The illumination of the vehicles signals when the vehicle recognizes these commands. This makes it easy to position the magnets in the right places and, for example, to properly adjust the transmission strength of vehicles and stationary IR modules. The vehicle directly signals to you with its lighting when it "sees" the respective signals.

You can obtain a qualitative representation of the magnetic fields using the Viessmann Magnetic detector foil item 8434, see page 9.

On page 14, you will find an overview of the mentioned modules and their functionalities. The most important functions necessary for driving are also supported by foreign IR control systems. But that's not all: the IR modules can, from IR Traffic upwards, control turnouts, and IR Traffic smart recognises the vehicle based on their IR signals, to trigger vehicle-specific actions.

A breakthrough in the application of road vehicles is the inductive charging of vehicles. No more searching for and charging broken-down vehicles.

Just enjoy the fun (see page 12)!

Professional plus level – central control of the professional level

You do not want the vehicles and the infrared modules to regulate traffic flow but rather want to control it from a central entity?

The signal from any DCC-compatible central unit can be used to control the vehicles. Place the transmitters where you want to influence the vehicles.

Common feedback systems using Hall sensors and reed relays also work.

You can also use the IR Traffic smart, which has outputs to a communication module with various interfaces to common bus systems, e. g. S88 and BiDiB.

Common central units and PC programmes can be used here. Foreign control modules, if they send DCC commands, will also be considered.

If you want to use distance control with foreign vehicles, simply activate the DCC compatibility mode in the CarManager. This will cause the CarMotion vehicles to send a corresponding message to other vehicles.

Unlike described in the professional level, where control by categories forms the basis of traffic management, here, control is based on individual vehicle addresses.

All levels can seamlessly transition into each other!

The basis

All vehicle in the CarMotion series are equipped with the following features:

- Charging and programming port
- Short charging times thanks to modern Li-Po batteries
- With a single battery charge, under normal driving conditions with waiting times and varying speeds, a runtime of approximately 4 hours is achievable. At maximum speed, this duration is approximately 2 hours.
- Simple on/off control using a reed switch located under the driver's cabin roof with a magnetic bar or telescopic magnetic bar item 8410.
- Infrared transmitter/receiver for distance control (partially compatible with other IR systems)
- Realistic braking and acceleration processes and constant speed thanks to speed-regulated motor
- Free loading area due to underfloor drive unit
- Cabin illumination
- Braking and reversing lights
- Direction indicators right/left and warning lights controllable
- Low beam/high beam headlights
- Roof lights (depending on the vehicle type)
- Clear see-through driver's cab with figure
- 5-pole plug-in coupling for connecting CarMotion trailers or semi-trailers
- Compatible with existing systems with contact wire or magnetic tape
- Control via infrared signals, permanent magnets item 8431 in the road, electromagnetic stop coils, and remote control item 8402
- Switchable auxiliary output for optional lighting effects
- Even without assistance system, a short straight reverse movement is possible via remote control
- Automatic detection of the trailers/semitrailers
- Retrofittable inductive charging coil

Item 8014

Item 8019

CarMotion trailer/semi-trailer features

Upon connecting to the tractor, the following functions are transmitted:

- Infrared transmitter for distance control
- Braking, rear and reversing lights
- Direction indicators right/left and warning lights controllable
- CarMotion trailers/semi-trailers are automatically detected the towing vehicle

Item 8210

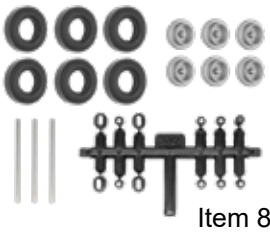
Item 8212

Retrofitting trailers/semi-trailers for CarMotion

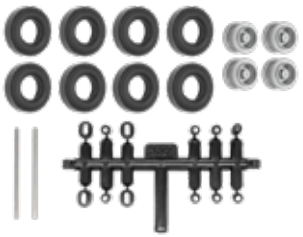
You can retrofit kibri trailers/semi-trailers with the following retrofit kits to make them perfectly suitable for CarMotion:

- H0 Bumper with LED lighting for trailers and semi-trailers (item 8420)
- H0 Retrofit kit rubber wheels for kibri trailers and semi-trailers, single tyre (item 8422)
- H0 Retrofit kit rubber wheels for kibri trailers and semi-trailers, twin tyre (item 8423)

Item 8420



Item 8422

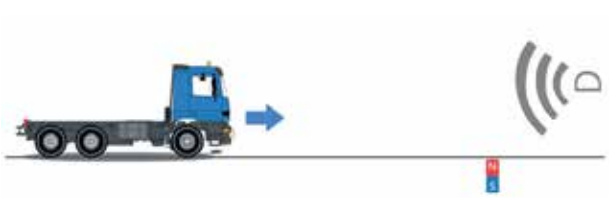


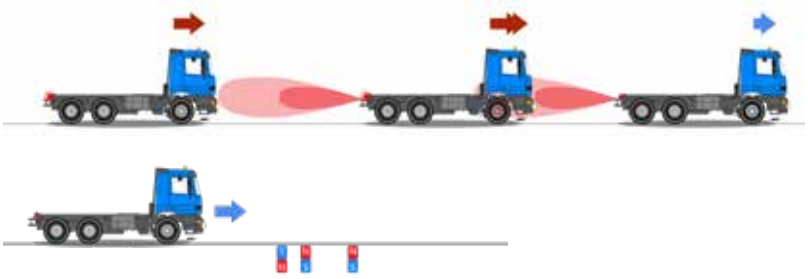
Item 8423

Video CarMotion

Out of the box, CarMotion vehicles offer a wide range of capabilities:

- Driving on existing road systems with wire or magnetic tape (item 8430)
- Distance control with other CarMotion vehicles
- Control of various special functions via permanent magnets (item 8431)
- Control of various special functions via IR remote control (item 8402)
- Control through stationary IR transmitters and receivers





Item 8402

Item 8010

Magnet sequences and configuration of CarMotion vehicles in factory condition

Permanent magnets

Various special functions of the vehicles can be controlled using permanent magnets that can be embedded in the road. A recommended distance of 3 cm is maintained between the magnets, although in cases where two magnets with opposite poles are used, the distance can be reduced to 2 cm for space constraints.

At the factory, the following functions are assigned to these magnet sequences:

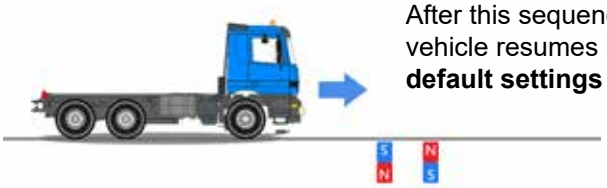
- N: Immediate stop
- S: Uniform deceleration
- S N: Cancels existing magnetic commands: direction indicators are switched off, previous speed is resumed, and the lane is reset to the base lane.
- S S: Notifies vehicles of a lane change to the stop lane for distance control
- S N N: Blinks right for 30 cm, during which speed is limited to 30 km/h
- S N S: Blinks left for 30 cm, during which speed is limited to 30 km/h
- S S N: Speed limited to 30 km/h
- S S S: Activate high beams

After this sequence the vehicle **stops** immediately

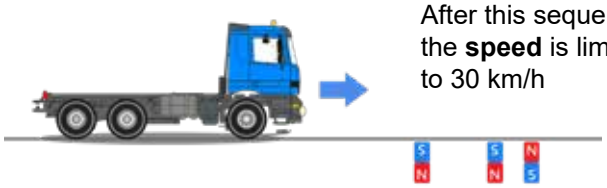
After this sequence the vehicle **blinks right** for 30 cm

After this sequence the vehicle **decelerates** uniformly

After this sequence the vehicle **blinks left** for 30 cm

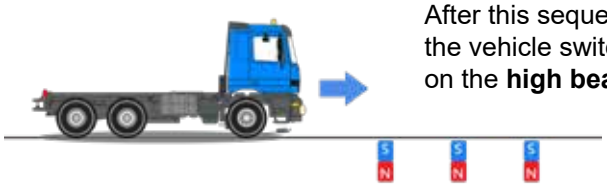


After this sequence the vehicle resumes its **default settings**

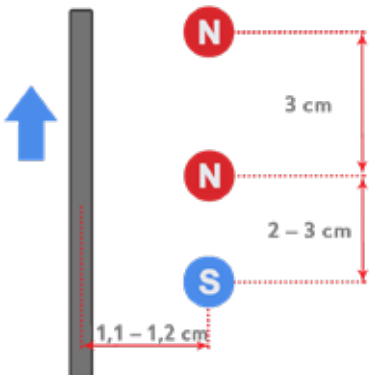


After this sequence the **speed** is limited to 30 km/h

Informs vehicles of a **lane change** to a different lane for distance control



After this sequence the vehicle switches on the **high beams**

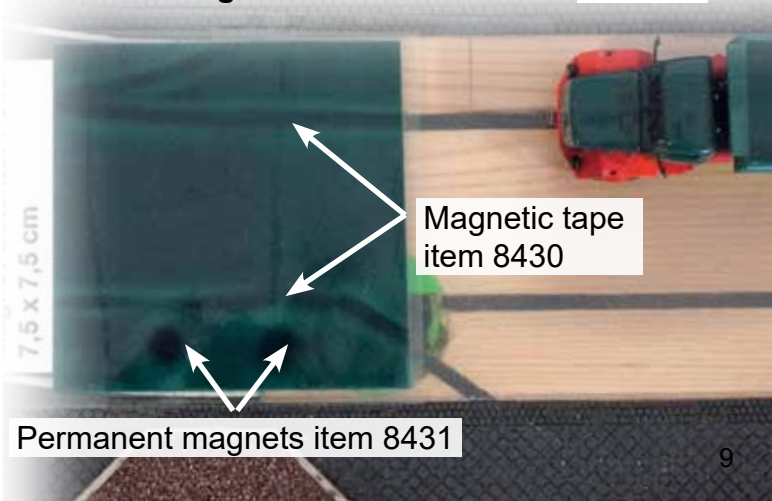


Item 8429 (0,5 mm)
Item 8430 (1 mm)

Item 8431

Magnetic fields become visible!

Item 8435 Magnet detector foil



Road preparation

Viessmann offers a wide range of accessories for road preparation. From marking aids for trucks or buses to indicate the magnetic tape positions, to marking templates for indicating the drilling holes for permanent magnets, you will also find a milling attachment for laying the magnetic tape.

However, if your road is already completely finished and you want to determine the exact location of the magnetic tape or the positioning of permanent magnets, you can use the magnetic detector foil. This “magical” foil makes magnetic fields visible.

Item 8433

Item 8411

Remote control

With the remote control item 8402 you can vary the vehicle speed. Furthermore you can switch various functions.

Below you will find an abbreviated form of the key assignment.

Please refer to the manual for more detailed explanations!

Key	Function
⏻	Switches the vehicle off (Switch on with integrated permanent magnet)
TEST	When the key is pushed, the connection to the vehicle is confirmed by the illumination of the cabin light and the rotating beacons.
+	Accelerate (in 10 km/h intervals)
−	Brake (in 10 km/h intervals)
↩	Stops and reverses the vehicle as long as the key is pushed down.
▶	By pushing this key, the vehicle starts off.
C	Display for battery charging level

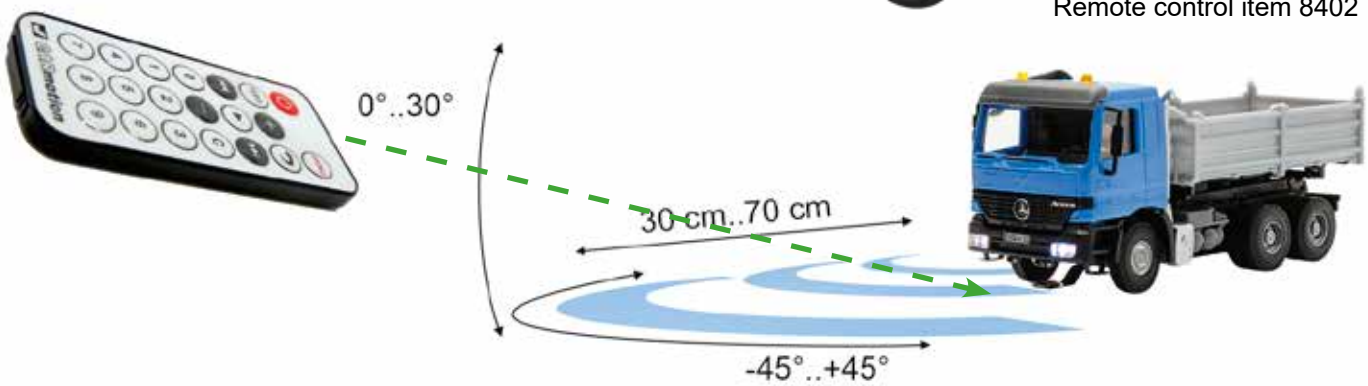
Key	Function
⏮	Direction indicator left
⏭	Direction indicator right
0	Switching of main lights
1	Switching of high beam
2	Switching of rotating beacons
3	Switching of warning lights

Video

Remote control item 8402

Hint

Since the infrared receivers are located beneath the bumper, it is advisable to aim the remote control slightly ahead of the vehicle towards the ground. This way, the direct beam or the reflection from the road surface reaches the receivers most effectively.



Individual configuration of the CarMotion vehicles

Using the programming device item 8401 in conjunction with the CarManager software, factory settings can be modified according to your requirements.

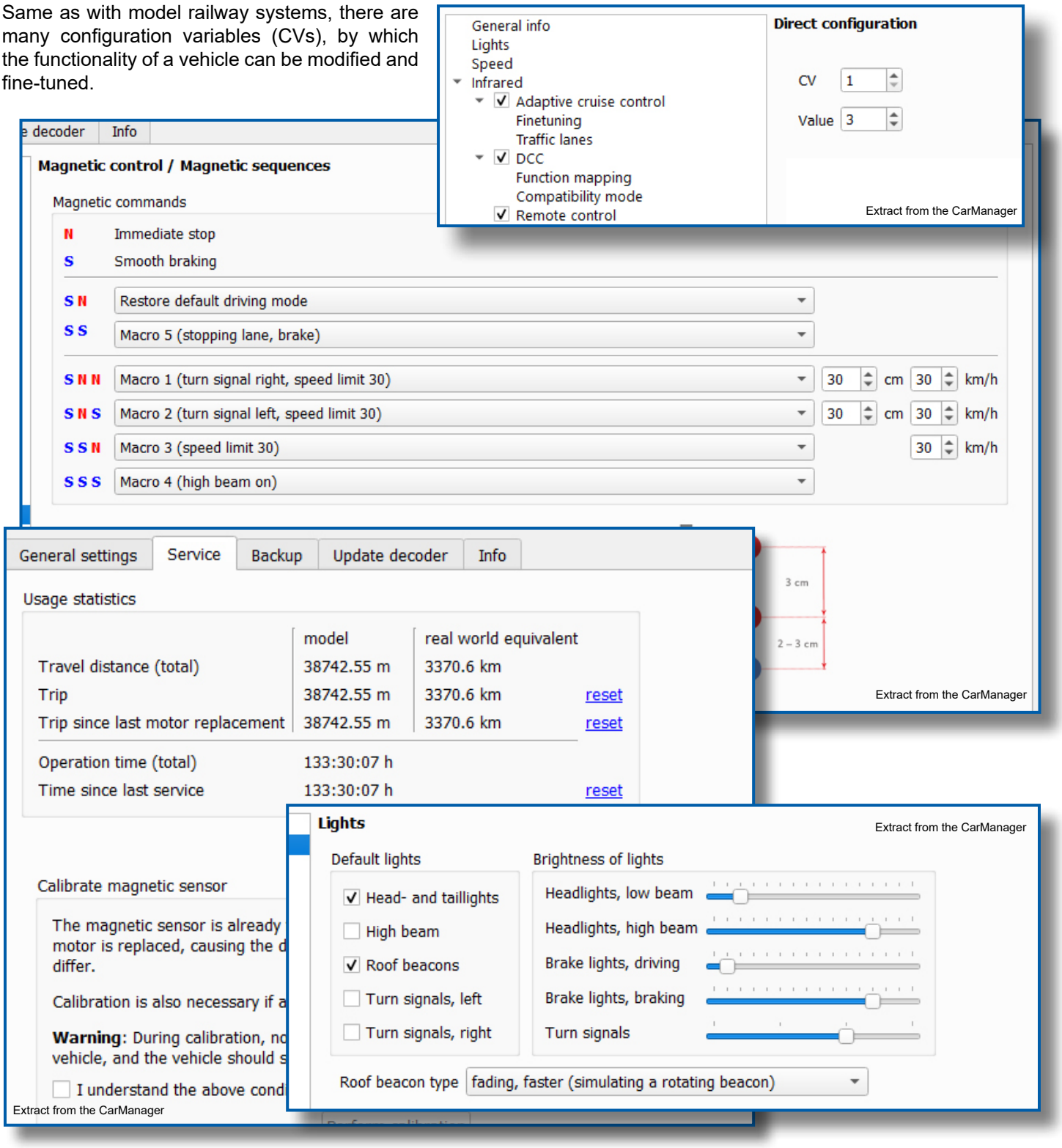
CarManager (Windows/Mac)

Each vehicle is individually programmable. To facilitate this, we offer the extremely convenient and free CarManager software on our website. The CarManager allows for the configuration of the following functions:

- Speed, acceleration, braking and lighting
- Distance control
- Function assignment of the permanent magnet sequences for each individual vehicle
- CV direct configuration
- Data backups and vehicle cloning
- Software updates
- Service data such as distance travelled

For further information and configuration options please refer to the CarManager manual.

Same as with model railway systems, there are many configuration variables (CVs), by which the functionality of a vehicle can be modified and fine-tuned.



Advanced control through infrared, continuous driving enjoyment via inductive charging

IR Mini item 8403

This is the simplest module and it can be conceptualized as a magnetic sequence that can be toggled on and off.

It is capable of transmitting all commands to a vehicle using two infrared transmitting diodes, similar to those triggered by magnetic sequences, but with additional functionalities:

- Enabling the execution of all stored macros within the vehicle, including those for which there are no magnetic sequences due to technical constraints.
- Convenient configuration of desired behaviours within the CarManager.
- Control input for switching the command transmitted by the IR Mini to the vehicle.
- Digital-capable (DCC).

The IR module can be controlled via this input using Viessmann traffic lights items 5094 and 5095, as well as railway barriers items 5104, 5107 and 5108.

Notably, this module, through infrared commands, can both initiate the braking process and bring the vehicle to a complete stop.

If precise vehicle stopping is desired, the addition of a magnetic north pole is required where the vehicle comes to a precise stop. The IR Mini also facilitates the resumption of a vehicle's journey.

The IR transmitting diodes can be concealed even in small boreholes within and alongside the roadway.

IR Traffic smart item 8405

This intricate module encompasses all the features of the IR Traffic module, with the added capability of an infrared signal input. Consequently, it not only transmits commands but also "listens" to the communication emitted by a vehicle in reverse. This enables the execution of more intricate actions based on vehicle characteristics. As vehicles also transmit their category information in reverse, such a module can be employed, for instance, to manage traffic flow.

- Specific vehicles, such as tractor-trailers or lumber transports can thus be prevented from entering urban areas.
- Based on the knowledge of the vehicle category, the module can then switch a turnout and divert vehicles selectively.
- Emergency vehicles are permitted to bypass red traffic lights.
- Configurable.
- Digital-capable (DCC).

Additionally, this module features an extra communication output for interfacing with other modules, allowing for the coordination of even more complex traffic operations when used in conjunction. This communication output can also be expanded to connect this module to common bus systems equipped with compatible digital control units.

IR Traffic item 8404

This module encompasses all the functionalities described in the preceding module.

In addition, it offers the following features:

- Sensor inputs for Hall sensors
- 2 control inputs (digital-capable DCC)
- 2 outputs for direct connection to Viessmann traffic lights (items 5094/5095), eMotion figures, and other control devices
- Servo output for turnouts

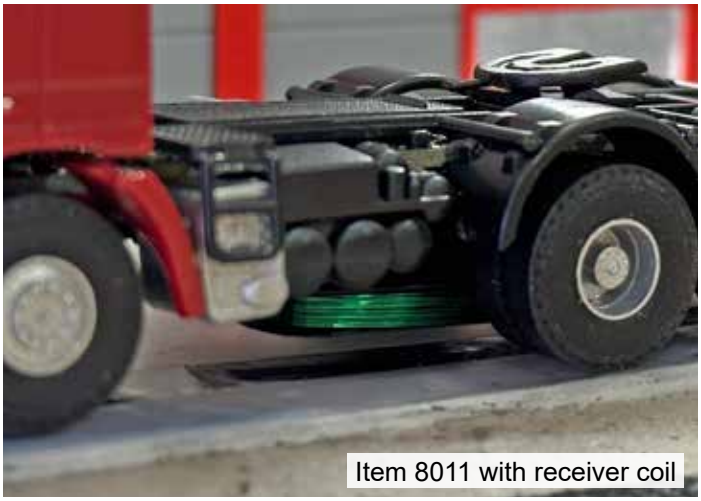
This module is primarily designed for implementing intersections. The Hall sensors at the sensor inputs ensure that the intersection is only traversed when no right-of-way vehicle is present in the intersection area. The power supply capacity of the IR outputs is enhanced, allowing for the use of additional IR transmitters to issue commands in multiple directions.

InduktivCharger item 8408

The InduktivCharger is fundamentally similar to the IR Traffic smart, but lacks an input for infrared receivers. However, it represents a quantum leap in the operational functionality of a car system. For the first time, it enables the induction-based charging of vehicles at any location where the vehicle remains stationary for an extended period. This includes scenarios such as traffic lights or railroad crossings. In addition to the already impressive runtime of the models, which can range from two to four hours for trucks depending on the operation mode, each charging session contributes at least twice its duration to the overall driving time. Essentially, it offers virtually unlimited driving time, reminiscent of model trains!

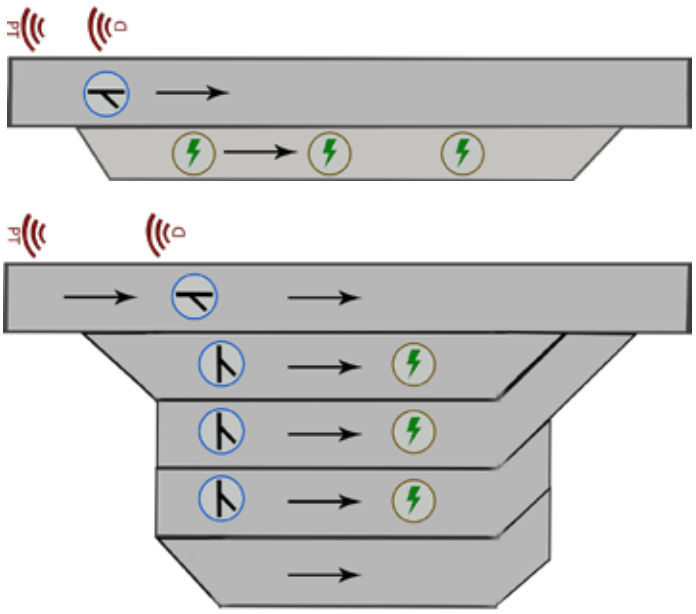
Furthermore, this charging technology facilitates communication with the vehicle, allowing for situational and targeted stops on slow-speed routes, for instance, when the battery's state of charge necessitates it. These InduktivChargers can also be interconnected with each other and with the IR modules.

This enables the organisation of a parking facility with multiple such charging coils, irrespective of whether these charging coils are arranged consecutively in a single lane or on parallel lanes. The vehicle parking positions are coordinated amongst themselves through the InduktivChargers.



Item 8011 with receiver coil

Instead, you simply issue a command to the InduktivCharger to stop, charge and subsequently power down all incoming vehicles.



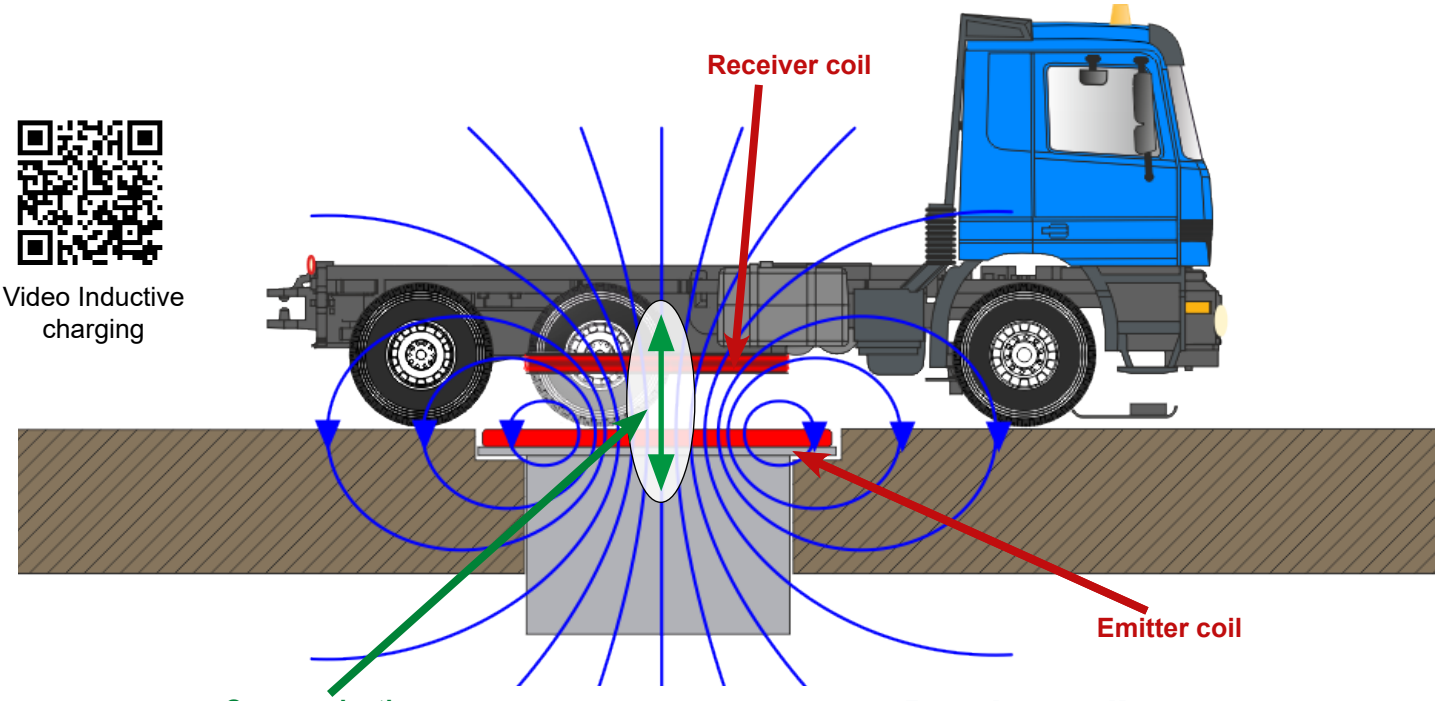
What's more, the InduktivCharger, via its inductive charging technology, can also power down and power up vehicles!

For you as the user, this implies that, after the conclusion or before the commencement of gameplay, you do not need to collect and charge the vehicles as is customary.

The optimal operation is achieved when you have as many InduktivChargers as you have vehicles in operation. You can then effortlessly stop and restart vehicles with a simple press of a button – an unprecedented level of convenience.

All IR modules and the InduktivCharger can be combined!

Video Inductive charging



Item 8050 with receiver coil

Receiver coil

The receiver coil can be retrofitted to all previously delivered CarMotion vehicles by simply plugging it in!

Technical Overview

IR Mini

- 2 infrared LED outputs
- Control input
- DCC-controlled module

IR Traffic

- 5 inputs for control and sensors
- DCC-controlled module
- 2 outputs for e. g. direct connection to Viessmann traffic lights (items 5094/5095), eMotion figures, and other control elements
- Servo output for turnouts
- 2 parallel-capable IR-LED outputs

IR Traffic smart

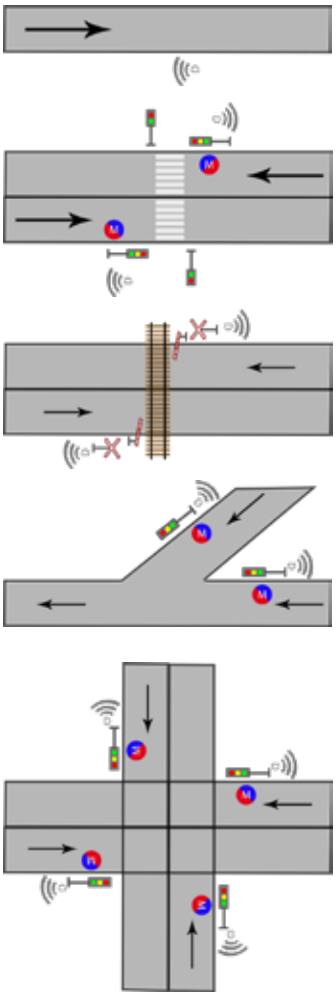
- IR-LED input
- Servo output
- Compatible with other IR modules and the Induktiv-Charger
- Connectable to the central unit via a communication module for bidirectional communication capability

InduktivCharger

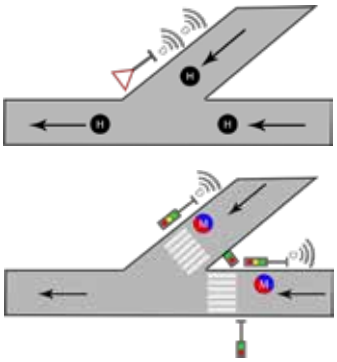
- Coil for inductive charging of vehicles
- 5 inputs for control and sensors
- Module controllable via DCC
- Servo output
- Combines seamlessly with other IR modules
- Connection to the central station via a communication module for bidirectional communication possible

Examples of use

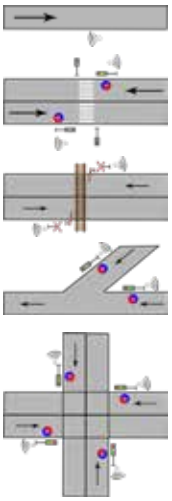
IR Mini



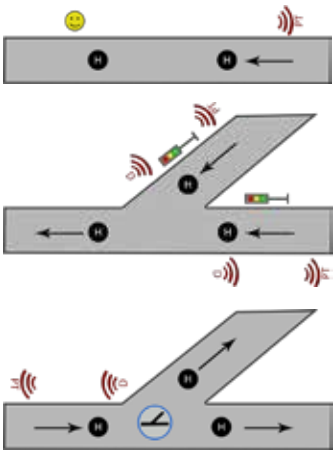
IR Traffic



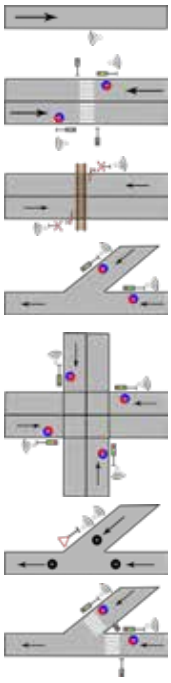
As IR Mini



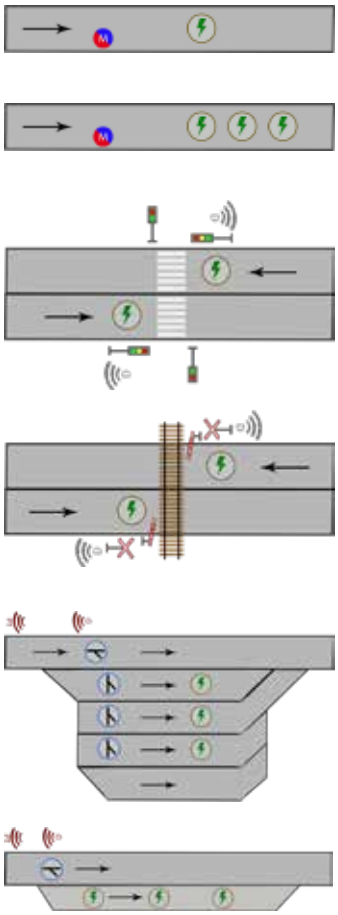
IR Traffic smart



As IR Mini and Traffic



InduktivCharger



Note:

The depicted permanent magnets serve to enhance the precision of vehicle stopping and are optional.

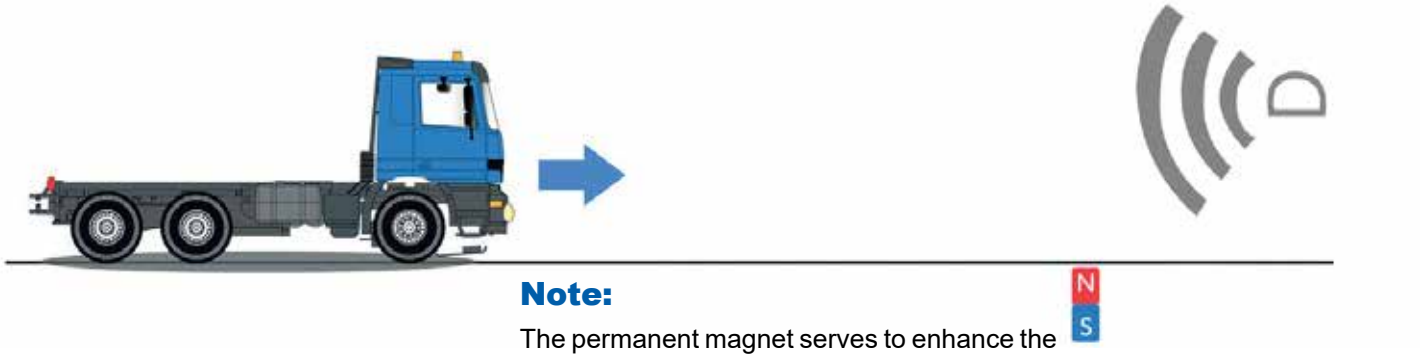
All modules can be updated via the CarManager!

Caption

- Driving direction
- Traffic lights
- Pedestrian lights
- Zebra crossing
- St. Andrew's cross
- Level crossing
- Traffic sign „Give way“
- Track
- IR Mini / IR Traffic
- IR Traffic smart (emitter)
- IR Traffic smart (receiver)
- Permanent magnet
- Straight road section
- Speed camera/ speedometer
- InduktivCharger
- Hall sensor
- Turnout
- Junction

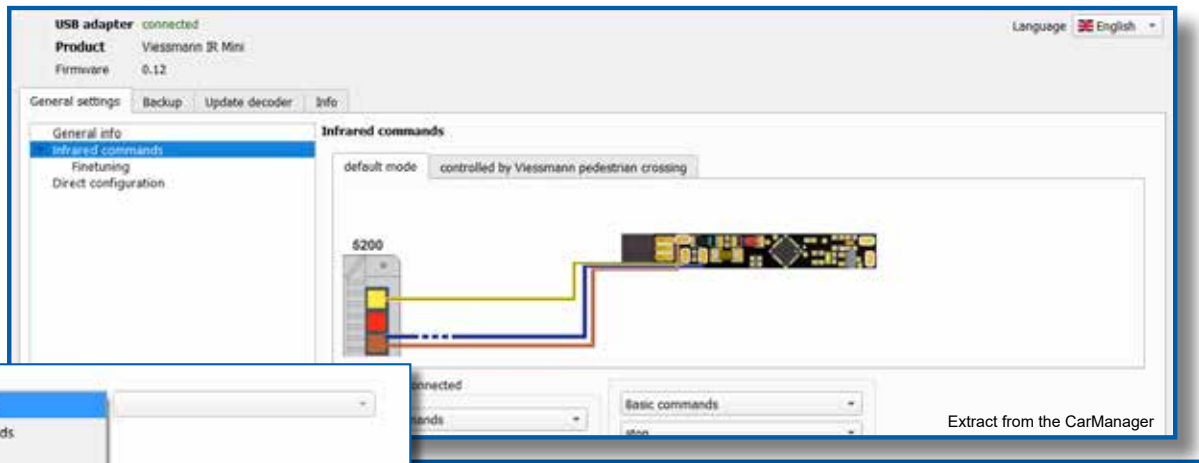
CarManager – the all-rounder for your CarMotion products

The CarManager also facilitates the convenient configuration of the commands emitted by the IR modules. This provides you with easy access to the macros within the vehicle without the need to modify the magnetic sequences.

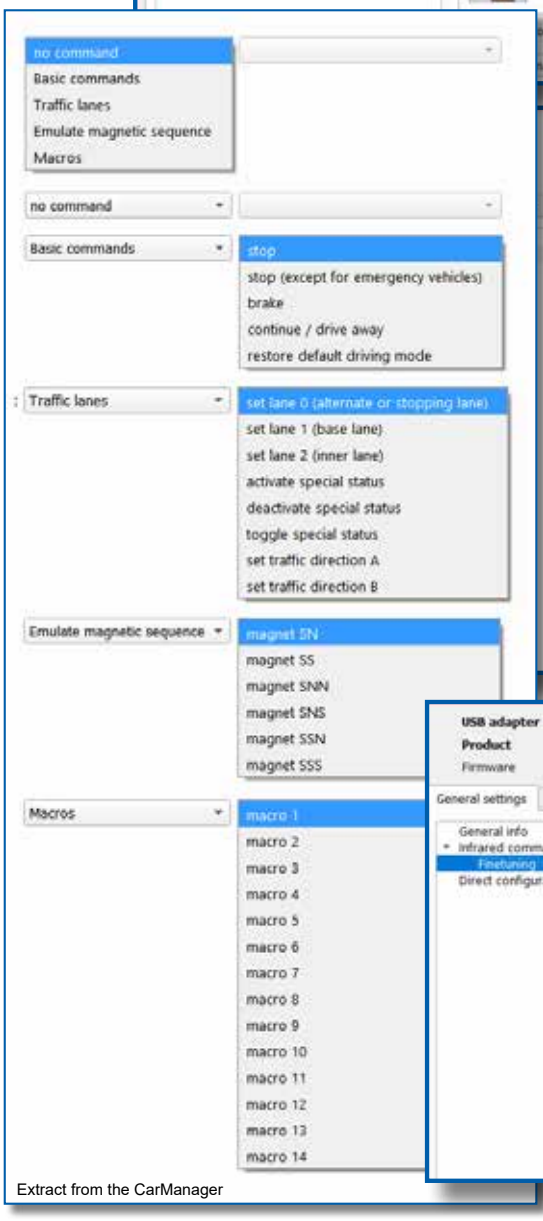


Note:

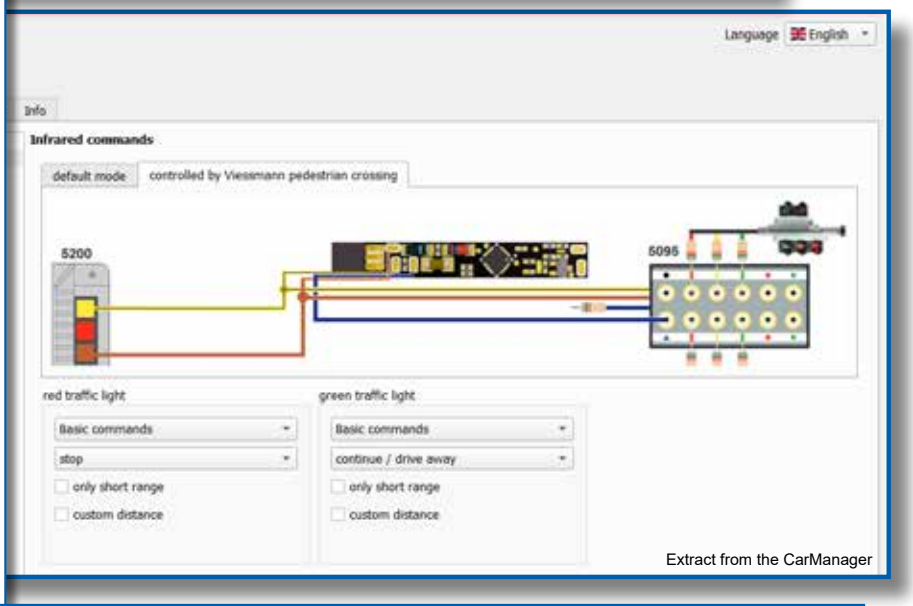
The permanent magnet serves to enhance the precision of vehicle stopping and is optional.



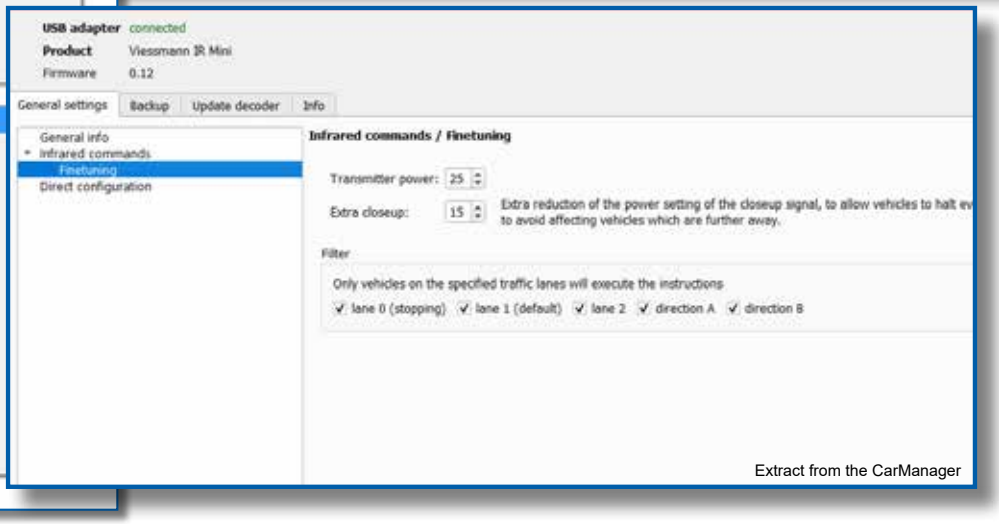
Extract from the CarManager



Extract from the CarManager



Extract from the CarManager



Extract from the CarManager

Vollmer Stone Art – The ideal roadway for Viessmann CarMotion!

VOLLMER
Eine Marke von Viessmann

Stone Art hand-made from quartz sand

The road plates from Vollmer Stone Art are ideally suited as a roadway surface for Viessmann CarMotion vehicles. Their naturally rough surface provides optimal traction, allowing for the overcoming of larger gradients.

Without any additional measures, CarMotion vehicles can effortlessly handle gradients of approx. 20%. Under optimal conditions and with the addition of extra weights, gradients of up to 38% (21°) can be navigated.

Furthermore, the appearance of cobblestone and asphalt roads is highly realistic, and their assembly is straightforward.

What makes Vollmer Stone Art so exceptional?

- Weatherproof and UV-resistant
- Natural appearance and texture
- The fine grain of the quartz sand composite material ensures excellent grip for Viessmann CarMotion vehicles
- Wear resistant

Using the Side strips cobblestone items 48238, 48239, realistic road widths can be achieved in curves.

Optimal accessories

1396

H0 ARAL Price display, two-sided

The prices can be adjusted wirelessly through a web browser from any end device according to your preferences!

1553

H0 Hitchhiker with moving arm

1558

H0 Petrol station attendant, moving

Art. 5094

Art. 5095

5094

H0 Arc traffic light with pedestrian signal

5095

H0 Traffic light with pedestrian signal

Gain comprehensive insights into the CarMotion system through our seminars. For more information, visit: www.viessmann-modell.com

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