

Uswer manual  
Traffic light  
Decoder 234  
with  
IR STOP  
(Version 2019)



**DC**  
**Car**

**Digital Controlled**  
**Digital Controlled**  
**voor Car-systemen**

# User manual

## Traffic light Decoder 234

### Version 2019

#### ***Preface***

Congratulations on the purchase of this traffic decoder.

A large number of traffic situations can be simulated with this traffic light decoder. Since a number of traffic situations can be quite complex, we want to use a number of practical examples to discuss the operation, connection and settings of this traffic light decoder.

#### ***Properties***

This traffic light decoder has a number of specific features:

- Supports different traffic situations
- Automatic phase change
- Manually operated phase changes by means of push button, reed contact, etc. (option)
- Digital operation by means of a digital exchange
- Drives DC-Car vehicles
- Drives Faller Car vehicles

A range of functions can be set via the free PC programmer software:

- Timing for each traffic light separately per colour
- Type of traffic situation
- Country-dependent light changes
- Operation: automatic, manual or digital
- Light change for bus or tram
- Light change on demand

After switching on the light change depends on the chosen setting:

- Automatic: The traffic lights start with the red phase, after which the following phases are automatically displayed depending on the set time
- Manual or digital control: The traffic lights all show the red phase. Only after the next assignment (green) is the other phase switched. Hereby only one side can always show green.
- When "Ampel-Phasen einzeln schaltbar" is selected, it is possible to set different traffic lights to green simultaneously. This can be used, for example, to create a green wave. The pedestrian lights are out of use in this position.

Support for the following traffic situations:

- Pedestrian crossing.
- T-junction with a priority road: 3 traffic lights, 2 of which switch simultaneously.
- T-junction equivalent: all 3 traffic lights are turned green in turns
- Intersection: traffic lights are turned green in turns
- Crossing: two directions are set to green simultaneously

Manual operation:

Via the optional Input print, the control is based on manually contacts. With this, the traffic lights can be set to Night mode / Outdoor mode, for example, only the yellow lights will start flashing. Each of the four traffic lights can be set to green or red individually. The intermediate yellow phase is executed automatically.

Setting the decoder:

This is done by means of the free downloadable Programmer software. This programming is done via a PC that is connected to the RS232 port of the decoder. You can also work with USB with a USB - RS232 converter. The required software can be downloaded for free. The most up-to-date Programmer software can be found in the DC-Car Wiki: [http://dc-car.de/wiki\\_en/index.php?title=Category:Download#Programmer for Servo-and Trafficlightdecoder](http://dc-car.de/wiki_en/index.php?title=Category:Download#Programmer_for_Servo-and_Trafficlightdecoder)

(This is German only software)

We can optionally setting of the decoder for you upon delivery. Send us an email with the desired settings with your order.

### **General.**

The decoder has connections for 4 traffic lights, each with a red, yellow and green light. In addition, there are 4 outputs for the pedestrian lights. In this way a large number of practical situations can be modelled. The decoder has a built-in STOP and -2 Speed steps for the DC-Car system (by means of infrared LEDs). With this, the DC-Car road traffic can be influenced and secured. This works in the Automatic Mode, in the DCC Mode (control via DCC control panel and connected PC) and in the Input Mode (control via the Input print by means of switches, relays, reed contacts, hall sensors etc.).

The processor can be set in 4 different ways:

1. 4 routes: 2 through routes are released simultaneously
2. 3 routes: routes are released one after the other
3. 3 routes, 2 routes are released simultaneously
4. 4 routes, routes are released one after the other

By using one of these options and programming the timing of the individual traffic lights you are able to simulate a large number of traffic situations.

For example, with option 1, "4 routes of which 2 are released simultaneously", by programming the timing of traffic lights A and C, you can create a "release 2 lanes simultaneously" option, or an ordinary pedestrian crossing in a through road with traffic lights and pedestrian lights.

## Connections.

Push button automatic addressing

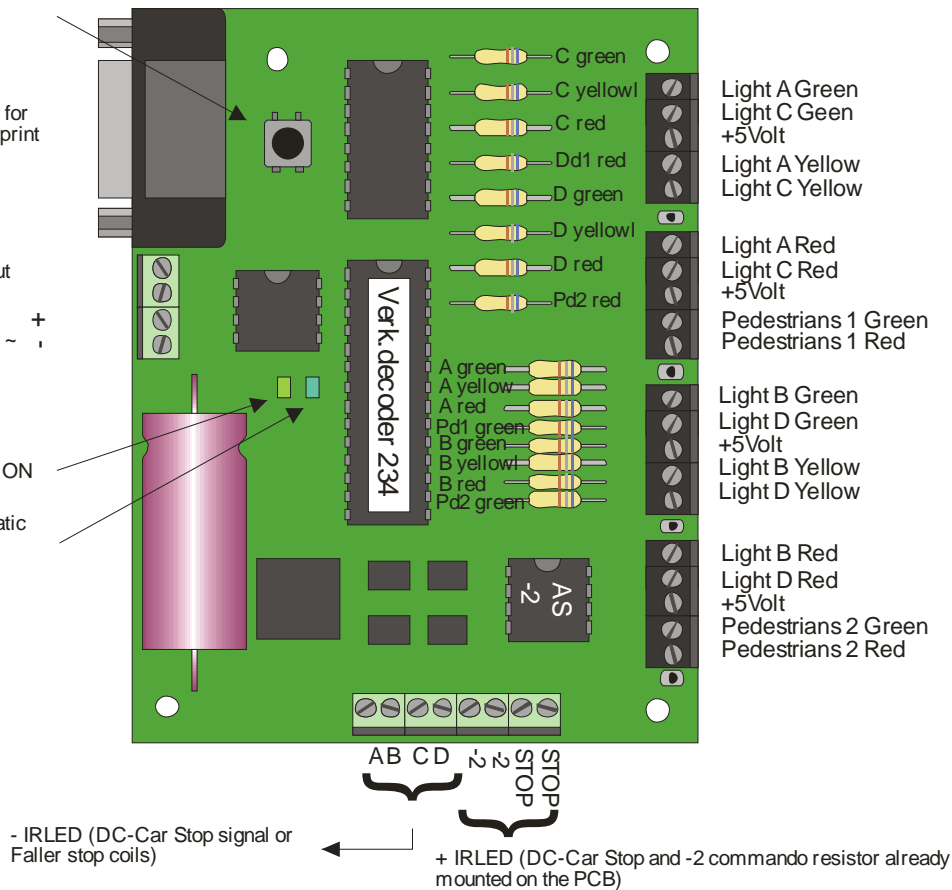
Rs232 input for PC or Input print

Digitale input

Supplie +  
12-16V = or ~ -

LED Power ON

LED automatic addressing



The decoder can also be used as a traffic control, so without traffic lights, for example to secure a road block, one or more junctions or junctions.

In addition, the decoder can be used well at parking ports, fire brigade fire stations, shadow stations, etc.

As a power supply you can choose between 12-16 Volts = / ~ voltage.

The DCC signal, the digital voltage that is also on the rails, is connected to the connector next to the RS232 input.

While the optional Input print or the PC, to program the decoder, is connected to the RS232 Connector.

The traffic lights to be used must have a common + connection and preferably be provided with low current LEDs.

The ballast resistors are pluggable on the PCB, depending on the desired brightness and the amount of LEDs connected in parallel, these resistors can be adjusted as desired. Make sure that you do not exceed the max. current for the LEDs. The above drawing shows which resistors are for which LEDs.

With parallel switching of LEDs of the same type, the resistance can be halved.

The resistors are 2k2 as standard and intended for traffic lights with low current LEDs.

The infrared outputs work as follows:

There are 2 outputs that permanently send the STOP command and 2 outputs that permanently transmit the -2 Speed step command. The outputs A, B, C and D are switched to earth if the traffic light in question is set to red, yellow / red or yellow.

The FALLER stop coils may also be connected to these outputs.

## Working with the -2 Speed steps and STOP command.

The decoder is equipped with built-in DC-Car commands for stopping and speed reducing of the vehicles.

### Fast stop with only one IR LED:

The IR LEDs are connected with the plus at STOP and with the minus (short leg) with the corresponding phase A, B, C or D. The vehicles will thus make a quick stop at red and yellow.

### Slow braking and stopping with two IR LEDs:

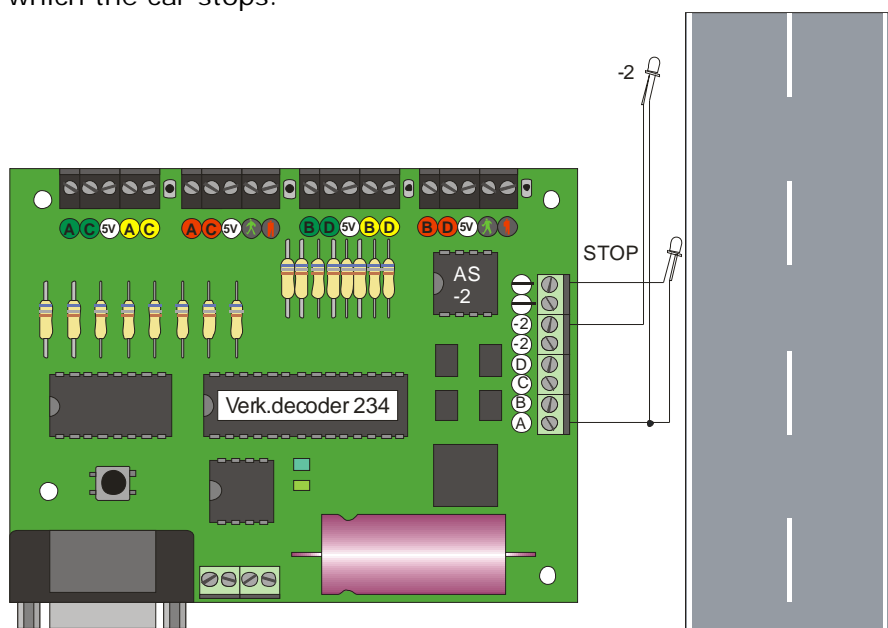
The drawing below shows how the -2 and STOP IR LEDs are arranged

Operation:

In this example, the IR LEDs belong to traffic light A, since they are both connected with their minus (short leg) to the A output.

An upcoming car first sees a -2 speed step command, which slows it down (with -2 speed steps) to a minimum driving position as specified in CV99 of the car decoder. The speed at which the -2 speed steps are carried out in the car is determined with the value in CV98.

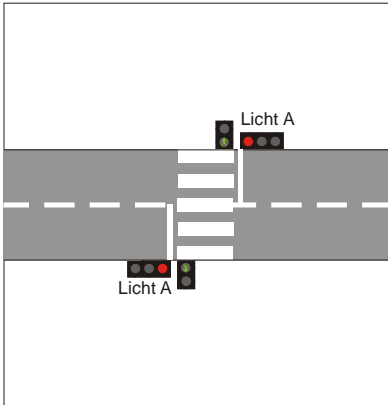
The car then drives on for a short while until it is within the range of the STOP IR LED, after which the car stops.



## Examples.

### 1. Crossing point with 2 traffic lights and 2 pedestrian lights.

For this we use the function: "Kreuzung Phase1 = A + C || Phase2 = B + D" which you will find when you start programming the decoder.



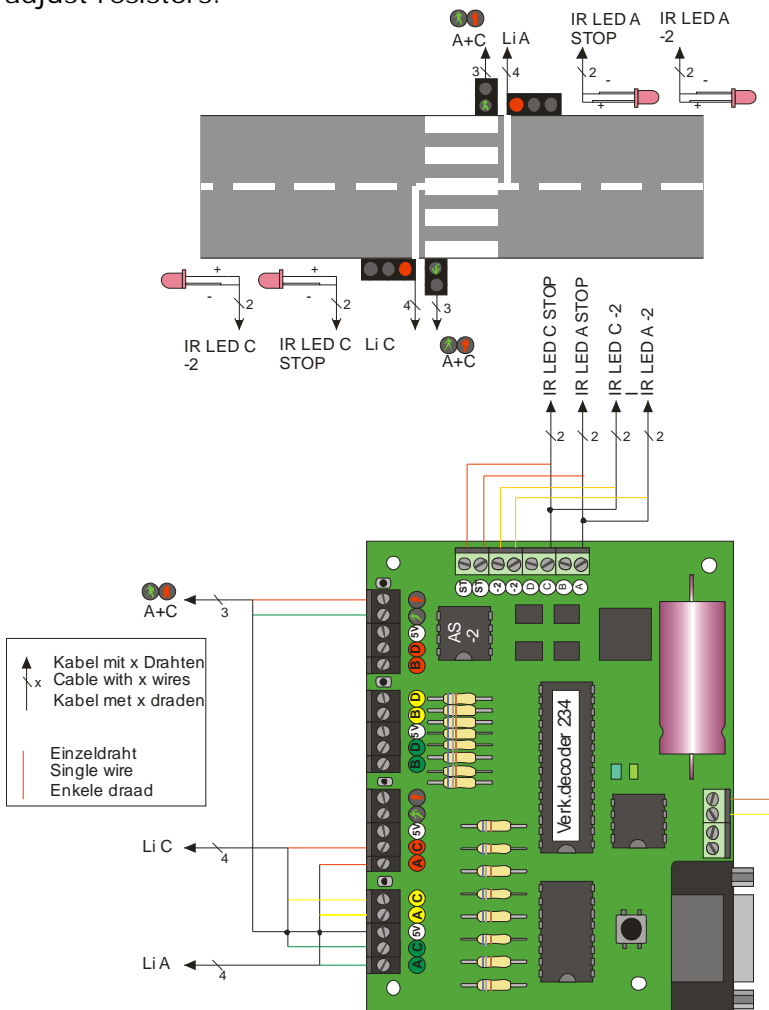
The A + C traffic lights switch simultaneously. We connect the traffic lights to exits A and C. The corresponding pedestrian lights are both connected to pedestrian light 2

We use the Stop command to drive the DC-Car cars. IR LED connected to outputs A and C. A will of course be placed at traffic light A, the IR LED connected to C at traffic light C. Optionally, you can also use slow braking with the -2 speed step command, see image below.

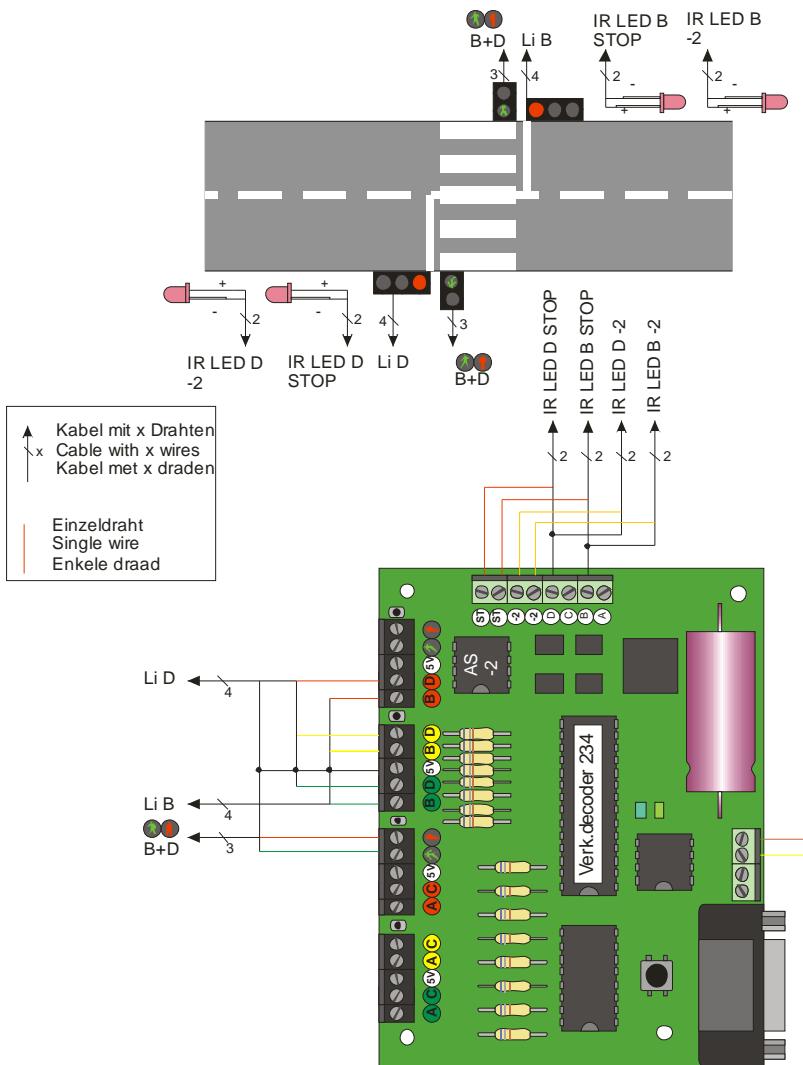
Of course you can make a different crossing somewhere else on the road with the traffic lights B + D. The pedestrian lights are then connected to pedestrian light 1.

This circuit can be used excellently to prevent "convoy driving" when you let DC-Car cars drive autonomously.

Note: you can of course also only use output A (and / or B) and connect the two traffic lights in parallel. For this you probably need the values of the link adjust resistors.

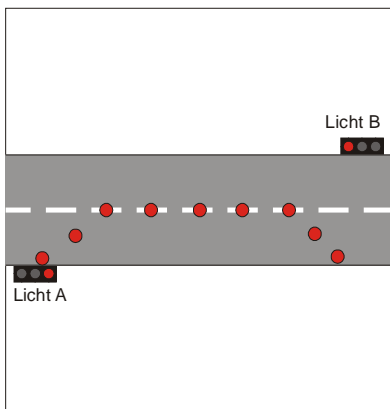


and / or a second crossing point:



## 2. Road narrowing with 2 traffic lights.

For this we use the function: "Kreuzung Phase1 = A + C || Phase2 = B + D" which you will find when you start programming the decoder.



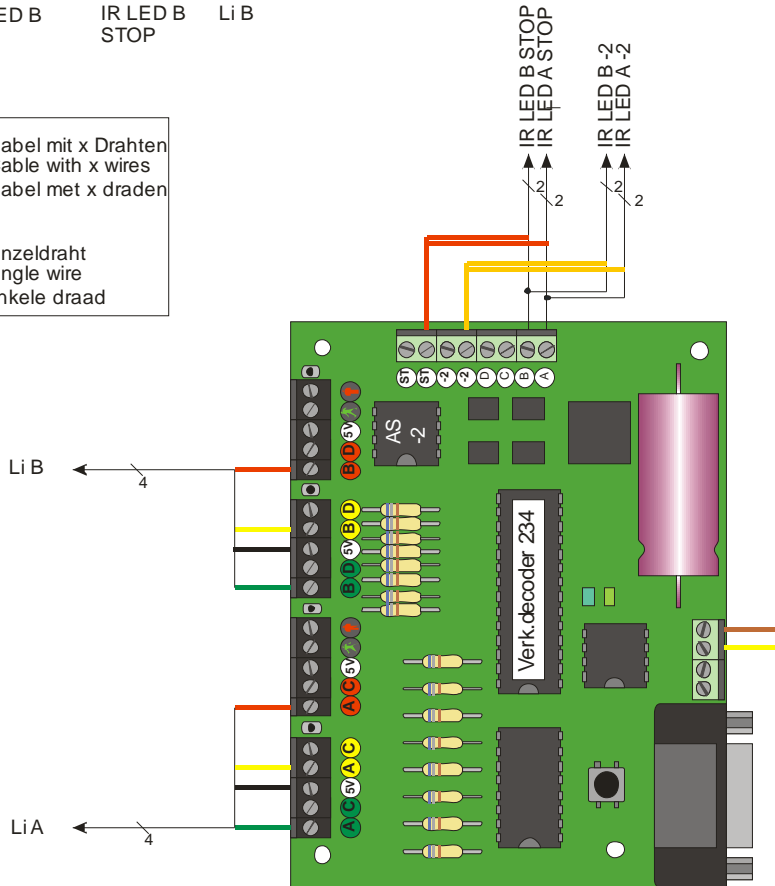
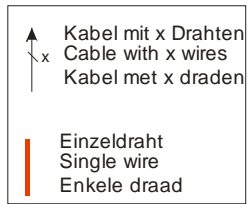
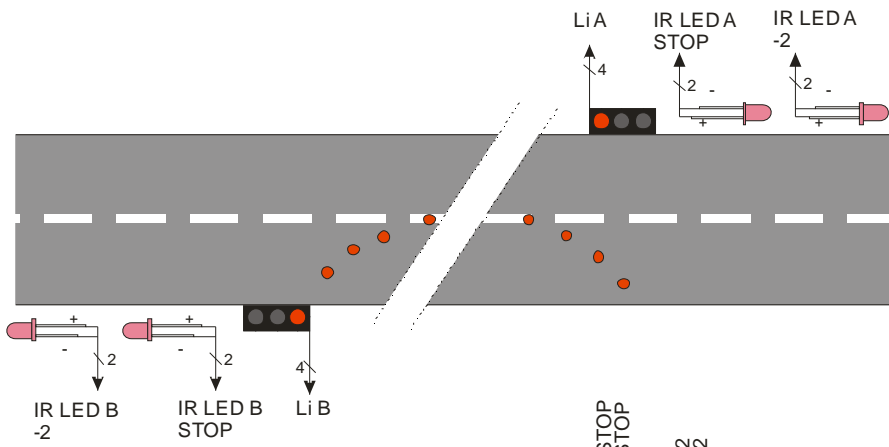
Only the traffic lights A and B are used. The timing of the phases (red, yellow and green) must be set so that the narrowing of the road can be made traffic-free.

Of course you can make a road narrowing or crossing somewhere else with the traffic lights C and D.

Note: you can of course also use this circuit without traffic lights, for example with a narrow bridge.

If you also have a movable bridge, you can stop traffic when the bridge opens with the optional Inputprint. Input 14 must then be switched to GND. This turns all the lights on red.

You can restart the automatic function by switching input 16 to GND if you have used traffic lights A and B (for B and C this is input 17). Read more about the optional Input print later in the chapter about this option.

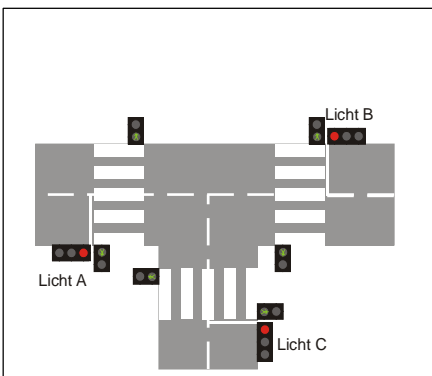


### 3. T-junctions

There are 2 options:

#### 1. A T-junction with equivalent roads.

We use the function: "T-Kreuzung 3 Wege Phase 1 = A, Phase 2 = B, Phase 3 = C" which you will find when you program the decoder.



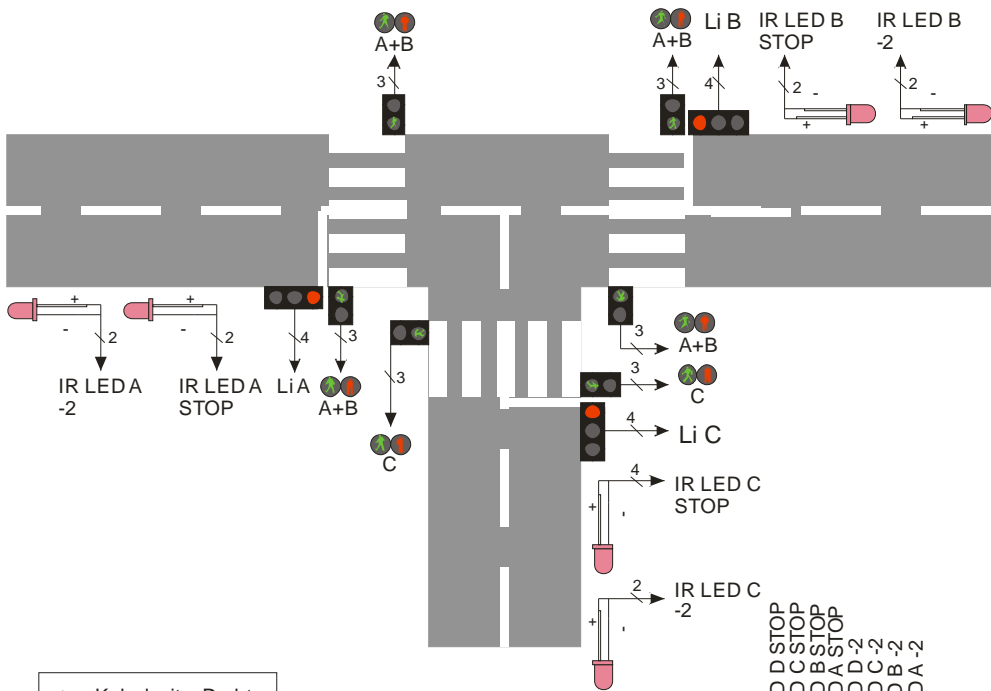
With automatic expiration:

The traffic lights A, B and C switch one after the other.

We connect the traffic lights A, B and C.

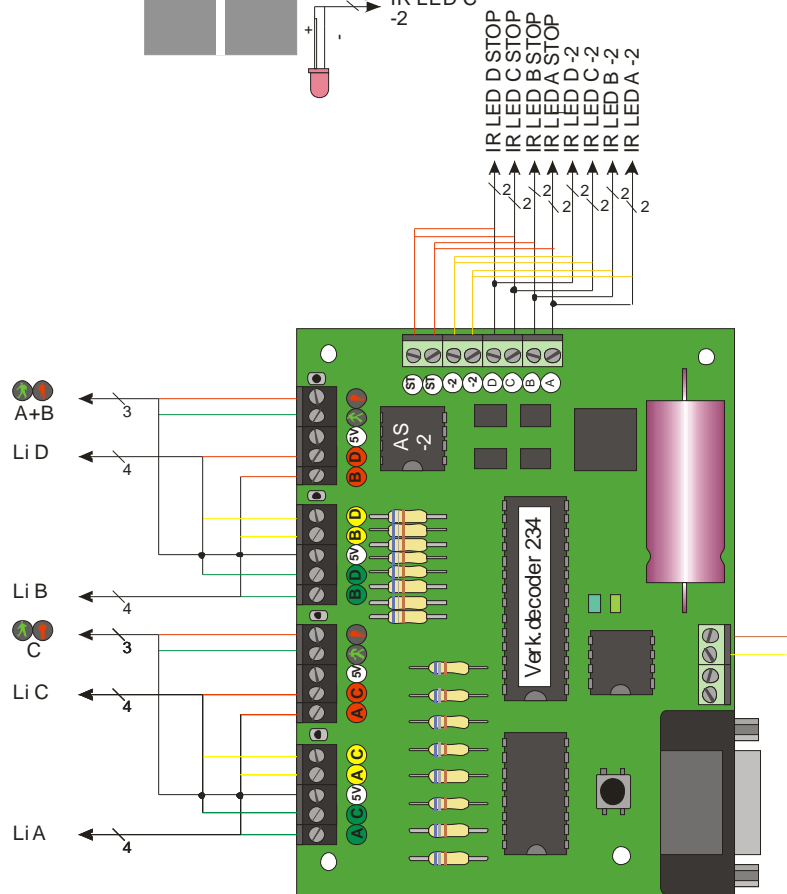
When you connect the pedestrian lights you must check "Füßgängerampeln zusätzliche Phase". (A + C at pedestrian light 2 and B at pedestrian light 1). This adds a separate phase for the pedestrian lights, the car traffic is stopped and the pedestrians get the green light.





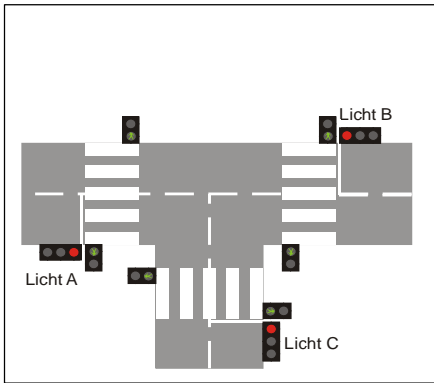
↑ Kabel mit x Drahten  
 Cable with x wires  
 ↑ Kabel met x draden

— Einzeldraht  
 Single wire  
 — Enkele draad



## 2. A priority road to which a secondary road connects.

We use the function: "T-Kreuzung 2 Wege Phase 1 = A + B, Phase 2 = C" which you will find when you start programming the decoder.

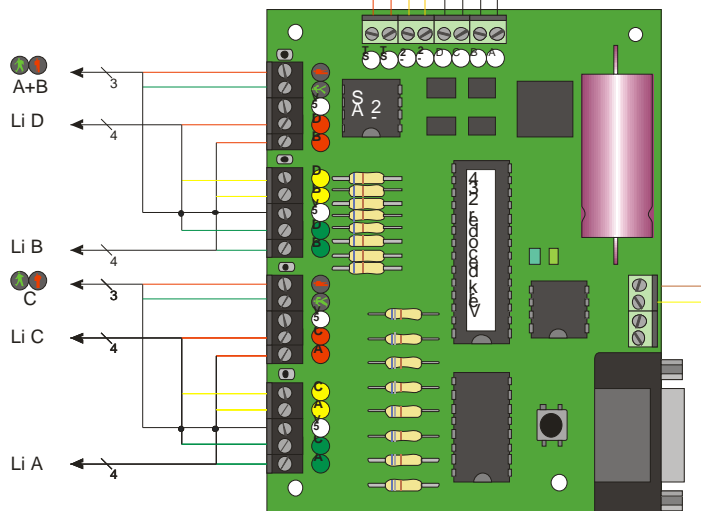
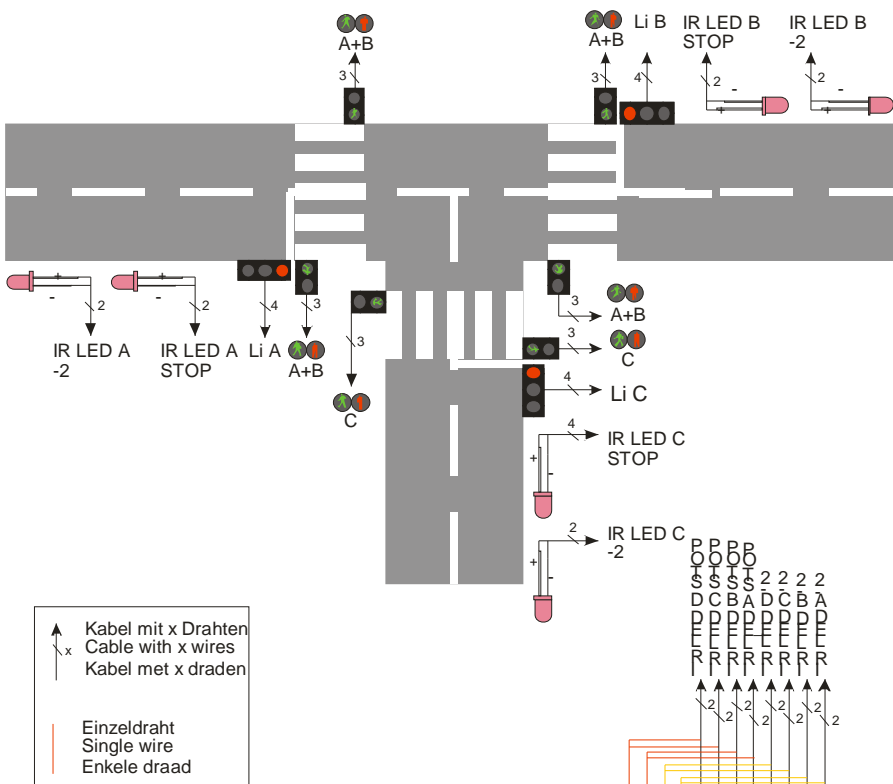


With automatic expiration:

Here, traffic lights A + B switch simultaneously.

We connect the traffic lights A, B and C.

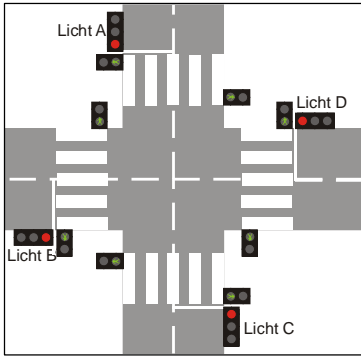
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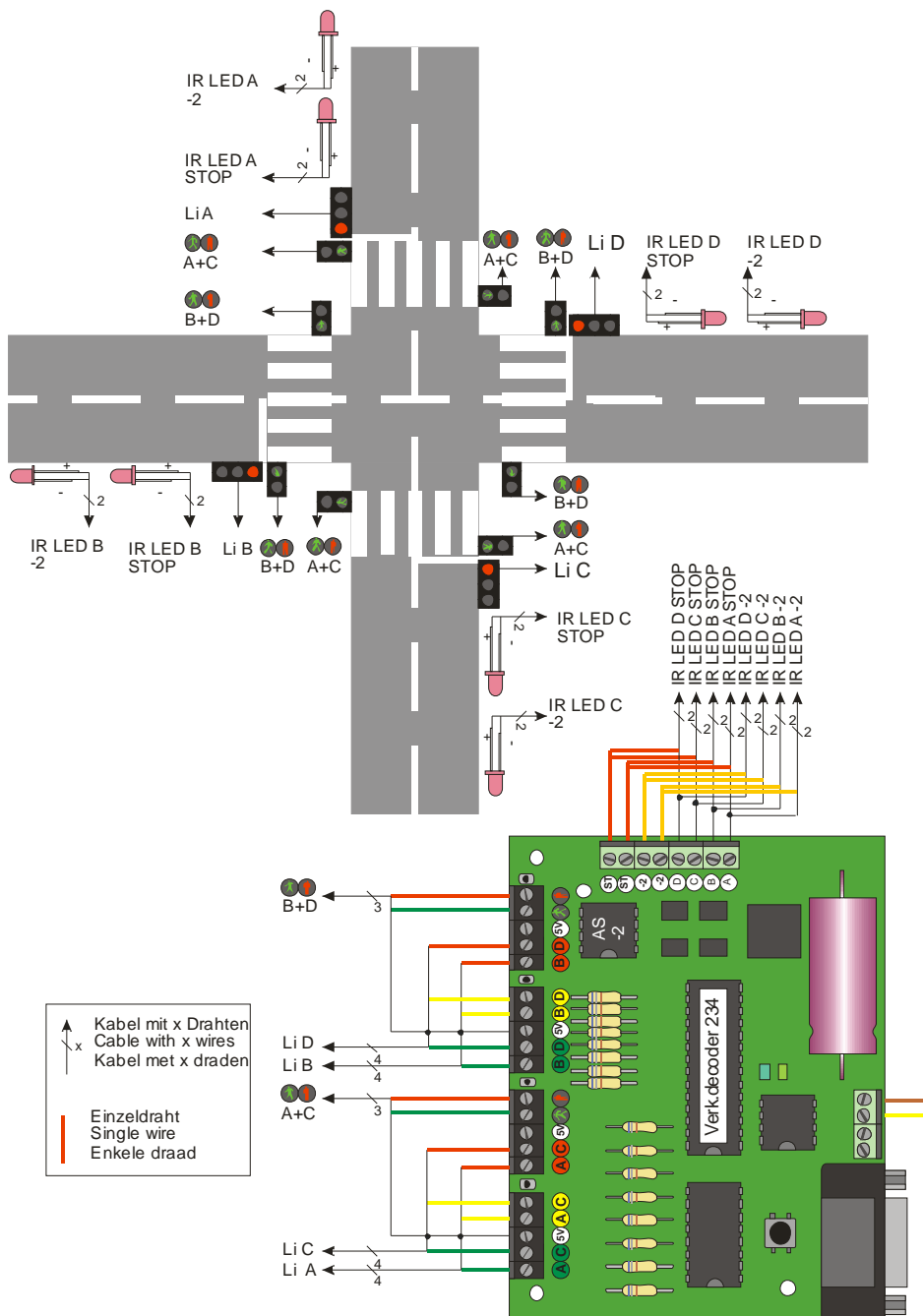
## 4. Crossings

There are also 2 options for an intersection:

1. We use function: "Kreuzung Phase 1 = A + C, Phase 2 = B + D" which you will find when you start programming the decoder.

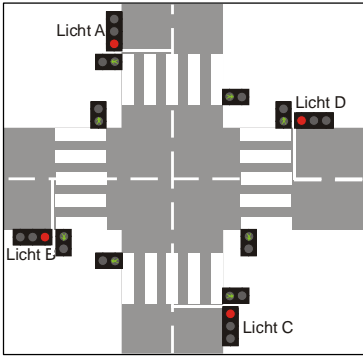


Opposite roadways are released simultaneously. The right-turning traffic can be arranged here, which should only watch out for pedestrian crossing.

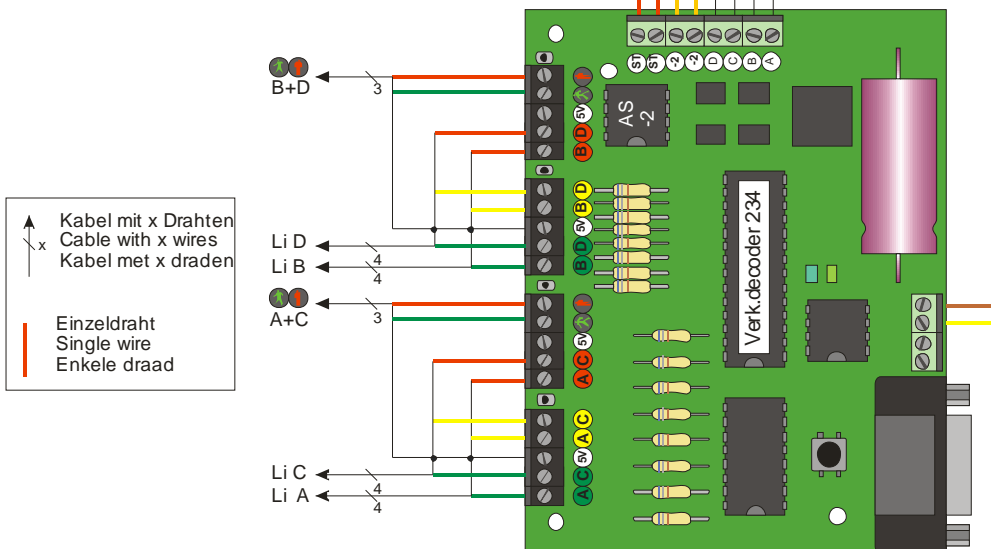
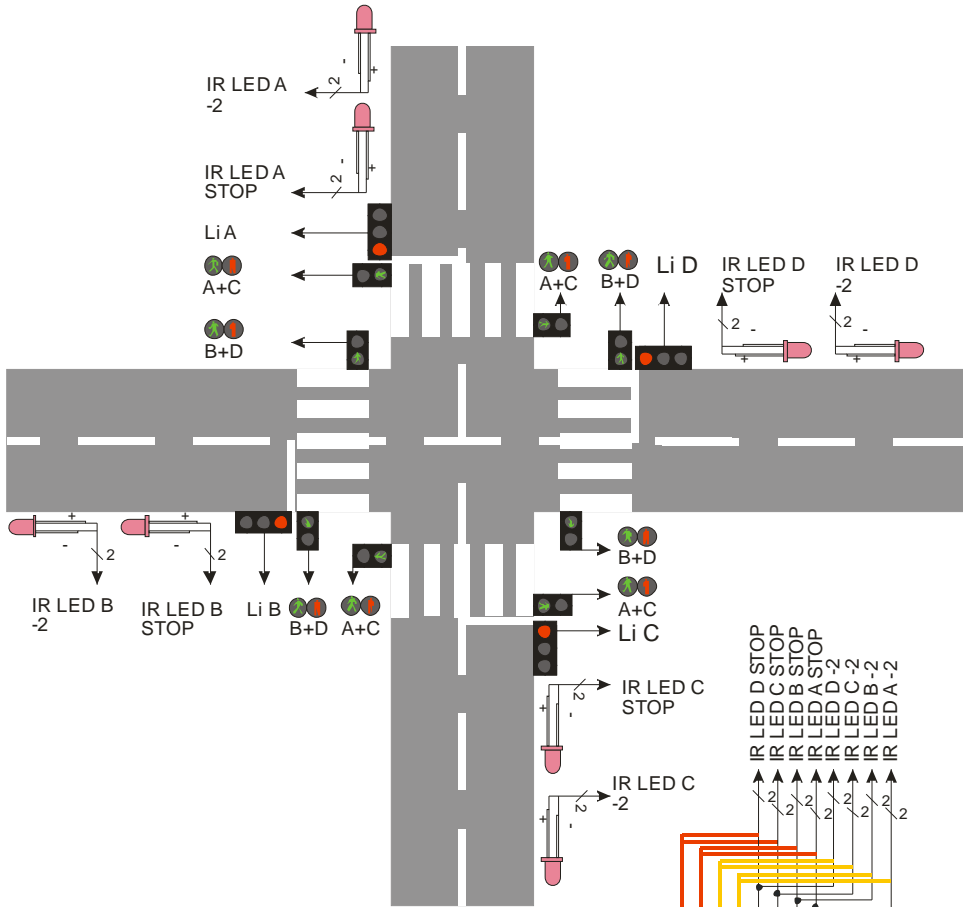


There is no regulation for left-turning traffic, for this you better use the setting below.

2. We use function: "Kreuzung 4 Wege Phase 1 = A, Phase 2 = B, Phase 3 = C, Phase 4 = D" which you will find when you start programming the decoder.



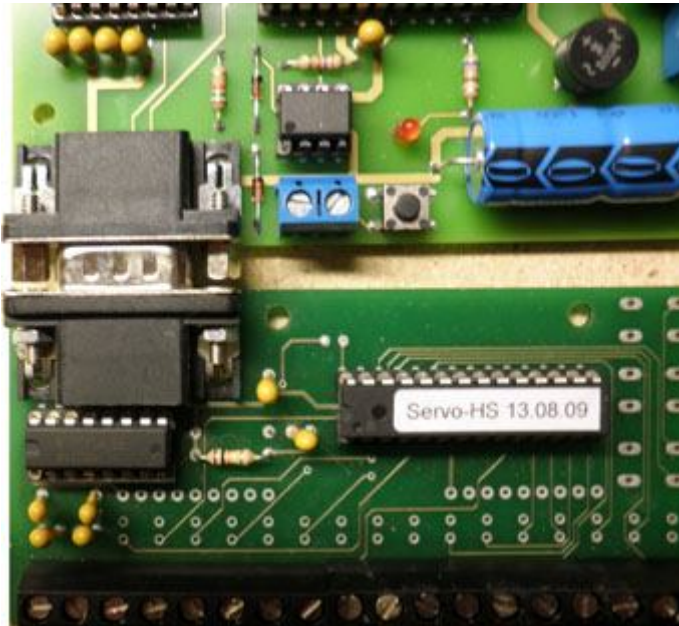
The roadways are released one by one. Hereby it is possible to control both right and left turning traffic.



## Even more options with the Input print.

Connecting Input print to the decoder.

For connecting the Input print to the traffic light decoder, the screw connections on the two Sub-D connectors are in each other's way. Remove one of the nuts on both connectors so that the connectors can be pushed together but the ground connection is maintained as shown in the image below.



You will get even more options if you connect the optional Input print to the RS-232 input. The Input print has 16 inputs that must be switched to ground.

The inputs have the following functions in the specified modes:

<b>Mode</b>	<b>Kreuzung Fase1= A+C/Fase2=B+D</b>	<b>T Kreuzung 3 wege Phase1=A Phase 2=B Phase 3=C</b>
Ingang		
1	+ 5V	+ 5V
2	GND	GND
3	Run A + C to green and stay on it	Let A run to green and stay on it
4	Run A + C to red and stay on it	Let A go to red and stay on it
5	Run B + D to green and stay on it	Let B walk to green and stay on it
6	Run B + D to red and stay on it	Run B to red and stay on it
7	No	Run C to green and stay on it
8	No	Run C to red and stay on it
9	No	No
10	No	No
11	No	No
12	No	Not allowed (regulation gets upset)
13	Flashing yellow	Flashing yellow
14	Everything red	Everything red
15	Start with phase B + D	Start with phase B - C - A etc.
16	Start with phase A + C	Start with phase A - B - C etc.
17	Automatic ON	Automatic ON
18	Automatic OFF	Automatic OFF

<b>Mode</b>	<b>T Kreuzung 2 Wege Phase 1=A+B Phase 2=C</b>	<b>Kreuzung 4 wege Phase A=1 Phase 2=B Phase 3=C Phase 4=D</b>
Input		
1	+ 5V	+ 5V
2	GND	GND
3	Run A + B to green and stay on it	Let A run to green and stay on it
4	Run A + B to red and stay on it	Let A go to red and stay on it
5	Run A + B to green and stay on it	Let B walk to green and stay on it
6	Run A + B to red and stay on it	Run B to red and stay on it
7	Run C to green and stay on it	Run C to green and stay on it
8	Run C to red and stay on it	Run C to red and stay on it
9	No	Run D to green and stay on it
10	No	Run D to red and stay on it
11	No	
12	Not allowed (regulation gets upset)	Not allowed (regulation gets upset)
13	Flashing yellow	Flashing yellow
14	Everything red	Everything red
15	Start with phase C - A + B - C etc.	Start with phase B - C - D - A etc.
16	Start with phase A + B - C - A + B etc.	Start with phase A - B - C - D etc.
17	Automatic ON	Automatic ON
18	Automatic OFF	Automatic OFF

This input print makes it possible to influence the course of the traffic light phases.

Examples of this:

Traffic lights at a railroad crossing: the train turns the traffic lights to red and then closes the trees.

But influencing by spectators by means of pressing buttons is also possible.

## Setting parameters with the PC:

This is done by means of the free downloadable Programmer software. This programming is done via a Windows PC that is connected to the RS232 port of the decoder. You can also work with USB with a USB - RS232 converter. The required software can be downloaded for free. The most up-to-date Programmer software can be found in the DC-Car Wiki: [http://dc-car.de/wiki\\_en/index.php?title=Category:Download#Servo-\\_en\\_Verkeerlicht-programmer](http://dc-car.de/wiki_en/index.php?title=Category:Download#Servo-_en_Verkeerlicht-programmer)

Note: We can optionally set the decoder for you upon delivery upon delivery. Send us an email with the desired settings with your order.  
This software is currently in German.

The free Programmer Software is intended to set the MoBa-Claus servo and traffic light decoders. Different types are available, all of which can be programmed with the same Programmer Software.  
These decoders can be controlled via a digital central unit with both DCC and Motorola protocol.

The program automatically recognizes the correct decoder type and adjusts to it. The digital format is also recognized automatically. It is therefore not necessary to know in advance which decoder you have connected or which parameters are allowed. Depending on the jumper setting, DCC or Motorola format is set on the decoder.

The following settings can be made with this software:

Type of junction / split  
Country selection: D / GB / O / NL  
Timing for all phase: red / yellow / green

After starting the program, all data from the decoder is first read out and shown in the program. After the connection to the decoder has been established, the version number of the decoder is shown in the bottom status line. You will then find further information there about current actions or error messages.

You will find the version number of the program in the "Hilfe" - "Info" menu.  
The connection between the decoder and the PC is established by a serial, 9-pin RS-232 standard cable established (male + female). Newer PCs or laptops without a serial port require a USB to serial adapter.  
The software is in German.

## Remarks:

To prevent errors while setting with the PC program, the digital central unit must be switched off in advance! Before the connection to the PC is made or disconnected via the RS232 cable, the decoder must be switched off !!

## *Installation of the PC Program*

### Download the most recent version:

Go to: [http://dc-car.de/wiki\\_en/index.php?title=Category:Download#Servo-\\_en\\_C Traffic lights-programmer](http://dc-car.de/wiki_en/index.php?title=Category:Download#Servo-_en_C_Traffic_lights-programmer)

Follow the instructions on your screen

The files are downloaded on your PC

Extract the files and place them in a folder.

Start the installation and follow the instructions that are shown on the screen.

## Connecting the decoder:

Disconnect the decoder from voltage if it was already connected!

First make the RS232 (serial) connection with your PC.

Switch the voltage on again.

Start the Programmer software.

Via the "Serieller Anschluß" menu you select the COM port to which the decoder is connected. The last used Com port is automatically recognized!

Note:

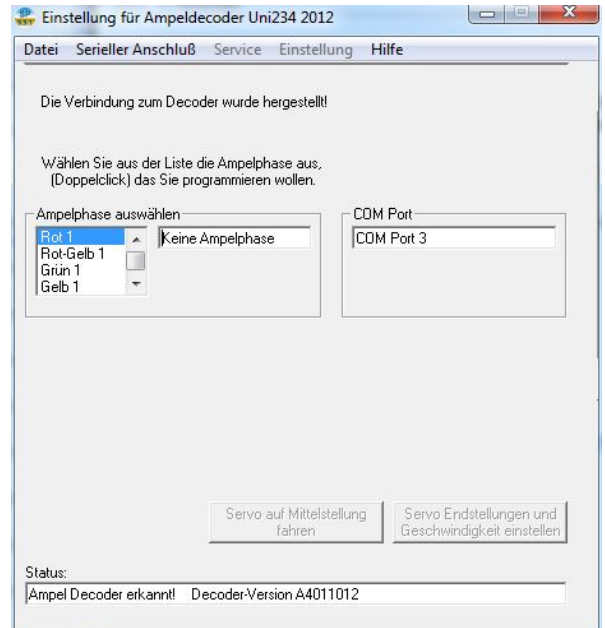
After changing the Com port, the program may have to be restarted.

If the connection is OK, a status line with the decoder type and version is displayed.

### Setting COM port:

In the "Serieller Anschluß" menu you can choose another Com port.

! Click on "Rot1" to open the following window.



### Setting the decoder

After you double click on "Rot1" in the previous screen, the screen shown opposite opens.

Here you set the timing, the traffic light phases, the digital address, the function of the decoder and the country selection.

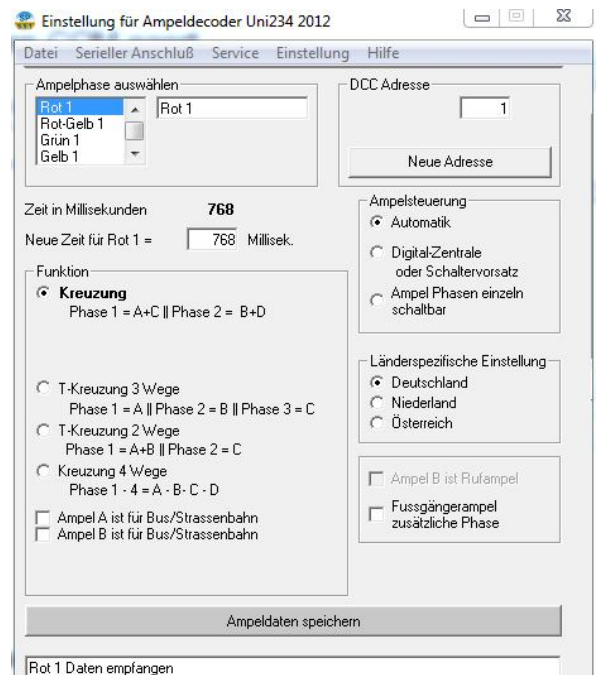
In the menu "Ampelphase auswählen" you choose for which phase / color you want to set the time.

At "Funktion" you choose the type of crossing or junction:

1. "Kreuzung": the roads intersect, there is no question of deflecting traffic. The lights A and C switch simultaneously, this also applies to the lights B and D.
2. "T-Kreuzung 3 Wege": a T-junction with equivalent roads. The lights A, B and C are controlled in succession.
3. "T – Kreuzung 2 Wege": a priority T-junction. The lights A and B serve the priority road, the light C serves the secondary road.
4. "Kreuzung 4 Wege": each road is switched individually. This can also involve deflecting traffic.

At "Ampelsteuerung" you choose how the decoder is operated:

1. "Automatik": the decoder works independently with an automatic light change as set in "Ampelphase auswählen".
2. "Digital Zentrale oder Schaltvorsatz": the decoder is controlled by the digital center of the Input print.
3. "AmpelPhasen einzeln schaltbar": the traffic lights can be operated separately.





At "Landerspezifische Einstellung: choice how the traffic lights are ordered.

1. "Deutschland": change of light: red> red + yellow> green> yellow> red> red + yellow etc.
2. "Niederland": change of light: red> green> yellow> red> green etc.
3. "Österreich": change of light: red> red + yellow> green> flashing green> yellow> red> red + yellow etc.

! For decoders with a built-in DC-Car STOP function: The cars stop with red light, red+yellow light and yellow light.

! Do not forget to save the change by pressing the "Ampeldaten speichern" button.

## DCC addresses by set the program

*It is simpler to use the decoder address using. to set up the Digital Central (see page 18)*

Start the Programmer software

Double click on "Rot 1" in the left list.

Now all settings and the address of the decoder are displayed.

In menu "DCC adresse":

Light 1 has the address 1 for a new decoder.

Light 2 has the address 2 for a new decoder.

etc.

To change the DCC address of the traffic lights, click on "Neue Adresse".

A new screen appears:

Instructions for the Intellibox:

(for other digital centers: see the manuals of this center)

Select the "Keyboard Adresse" group with which you want to switch the DCC decoder via the digital central unit.

The indication "Touch pair" corresponds to the number of the traffic lights.

The new addresses are calculated and displayed.

Click on "OK".

Click on "YES".

The new DCC Addresses are now stored in the decoder.

## Set Motorola addresses via the software

It is easier to set the Decoder addresses via Digital Central.

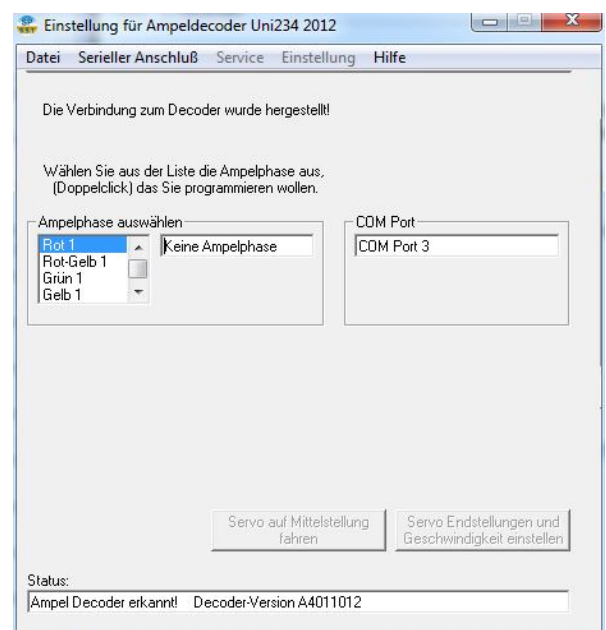
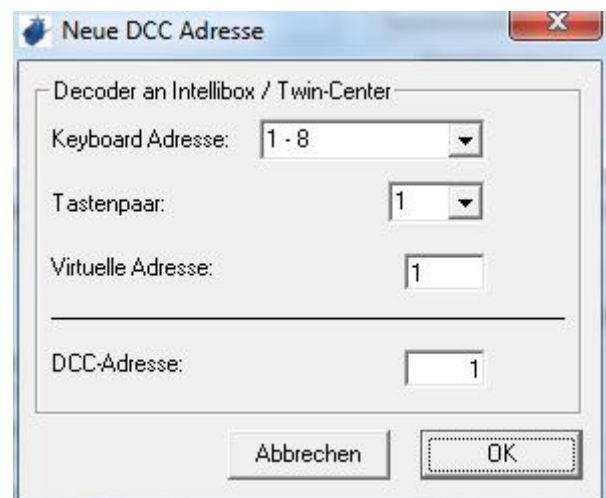
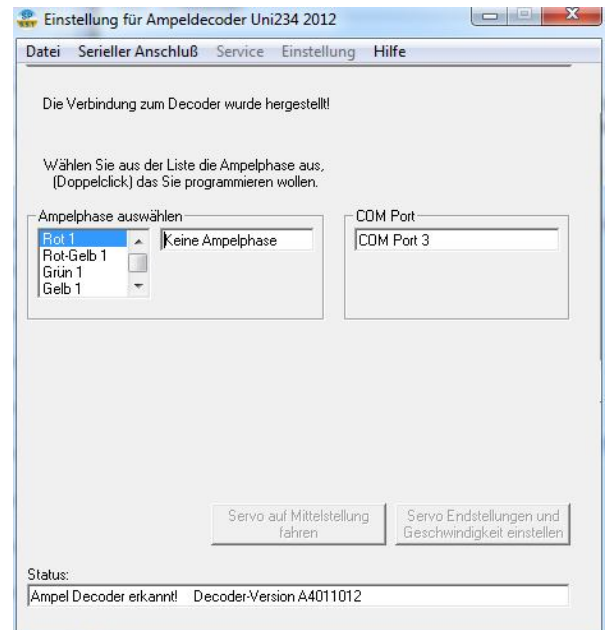
Start the Servo Programmer software.

Double-click on "Rot 1" in the left list

All data from traffic light 1 is now displayed.

Light 1 has the address 1 for a new decoder.

Light 2 then has address 2 etc.



To change the Motorola addresses of the servo, click on: "Neue Adresse".

A new window appears:

Instructions for the Intellibox:  
(for other digital exchanges see the manuals of this exchange)

Select the "Keyboard Adresse" group with which you want to switch the traffic lights via the digital control unit.  
The indication "Touch pair" corresponds to the number of the lights.  
The new addresses are calculated and displayed.  
Click on "OK".  
Click on "YES".

The new Motorola addresses are now stored in the decoder.



### Set decoder addresses via the digital central unit

Connect the decoder to the control panel output and switch on the decoder.  
Switch on the control panel.  
Press the Programming button on the decoder. The red LED flashes slowly.  
Now press a button on the control panel with which you want to operate the decoder.  
The decoder now automatically takes over the address and saves it.  
That the address has been stored is indicated by a faster flashing of the LED.  
Press the Programming button on the decoder again to end automatic learning.  
This is the first magnet article in the series of 8.

Now test whether the decoder responds to the control panel when you press the corresponding keys.

Note:

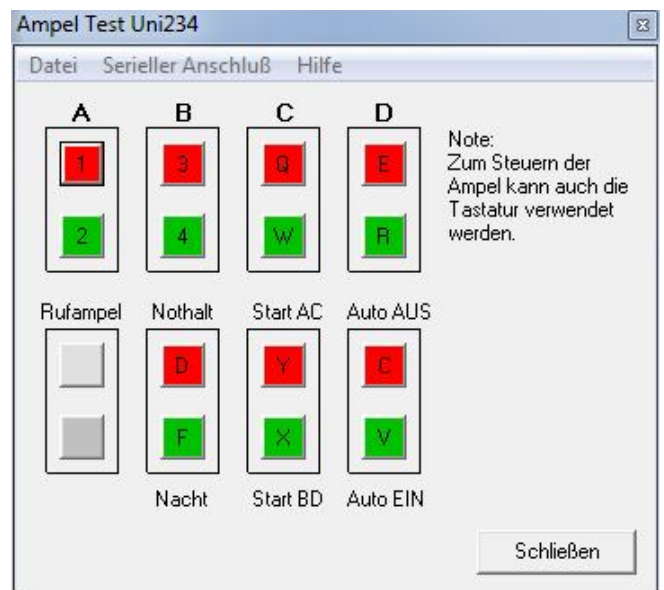
As long as the red LED is flashing slowly, you can stop the learning procedure by pressing the programming button again.

### Testing of institutions

Via the menu "Datei" you have the option to control the traffic lights as with an Intellibox.

Click on the "Datei" menu and then on "Ampel test"  
A new window will open.

By clicking with the mouse on the red or green keys you can now operate the decoder.  
This is also possible by pressing the corresponding keys on the keyboard.



More information: [http://dc-car.de/wiki\\_en/index.php?title=Main\\_Page](http://dc-car.de/wiki_en/index.php?title=Main_Page)



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