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## ACD dicon

The **ACD dicon** system is specially designed for upgrading wood based slotcar tracks to work digital with track changing. Due to the pre fabricated lane change unit and due to the module based structure, the upgrading is very easy for any track. The **ACD dicon** can also be mounted on Carrera Tracks by upgrading the standard Carrera lane changer with a special **ACD dicon** PCB.



The technical data of the system fulfill the requirements of professional racers by using a very well designed electronic and mechanical modules.

The **ACD dicon** system can handle up to 24 cars with a total continuous current of 10A and a pulse current of up to 30A. The main unit (Black Box) resists short circuits up to 40A without problem.

The **ACD dicon** system uses a special ACD dicon controller which sets the driving parameters at the same manner as the analog ACD pro controller. There is no difference between analog and digital.

## Special features

The **ACD dicon** system uses a special decoding algorithm, which is very fast and stable. This is very important to give a direct control from the controller to the car with a very little time delay. The data transfer is done via the lane power and do not use wireless components. Please see the other documents for more details.

The **ACD dicon** system can handle up to 8 lanes and up to 24 cars at the same time. The standard main unit can handle up to 16 Cars. Main units for more than 16 cars can be delivered on request.

The **ACD dicon** system gives the same driving feeling as analog driving. This means that the precision, reaction and all settings found in the analog world are available. This is very important to give the best racing power up to 50 kmh car speed. All system modules and components are designed for high speed and the system uses very professional controller with fine adjustments of sensitivity, brake and maximum speed. In addition there are 2 Trigger modes for aggressive and normal.

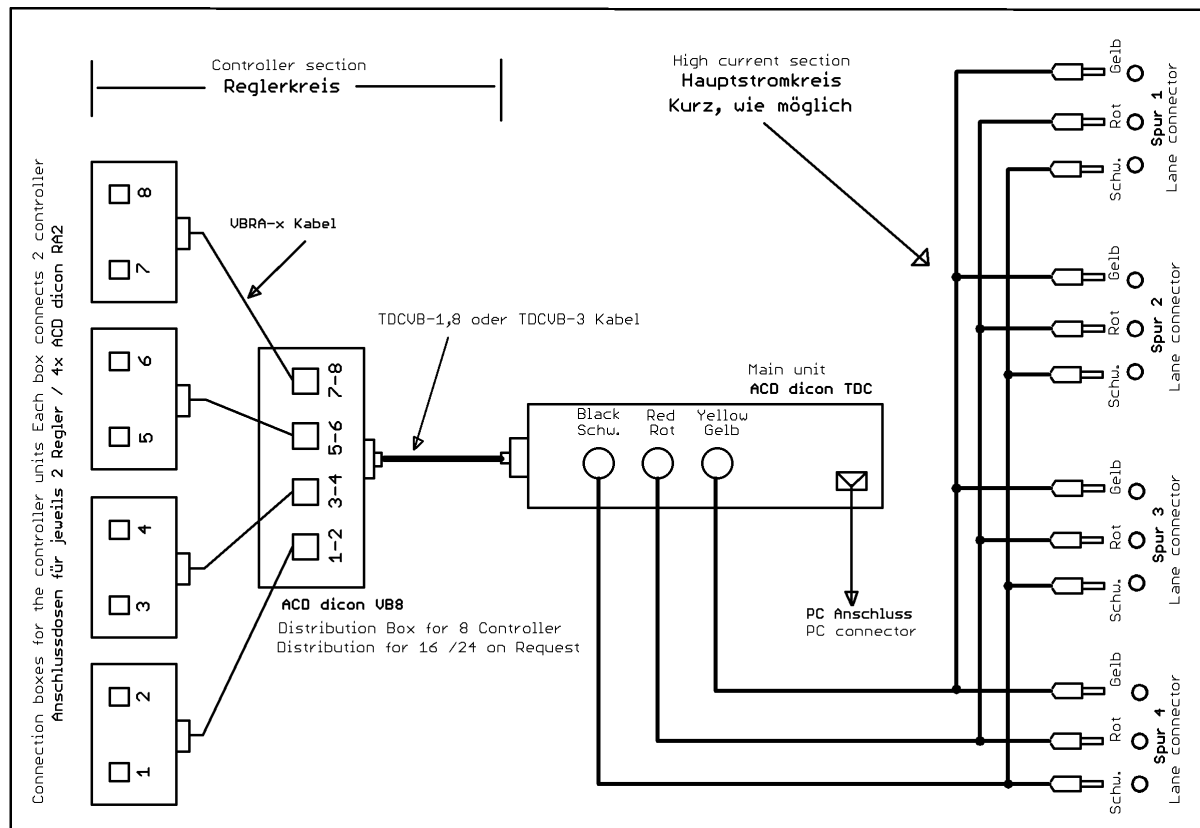
The **ACD dicon** system can be easily implemented in any wood or Carrera plastic track. Due to the pre fabricated lane changer module the implementing of the system is made very simple. Please see the user Manual for detailed information's.

The **ACD dicon** system can be switched very easily between analog and digital. It is even possible to configure some lanes as analog and some other lanes as digital at the same time.

The **ACD dicon** basic system is already available on the German market since February 2010.

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## Electrical System connection



**Figure 1: Typical wiring for a 4 lane 8 car track**

The **ACD dicon** system can be adopted to a given track just by connecting it to the analog controller inputs of the track. Any correct wired track should be work with this connection.

This wiring method make it possible to connect any count of lanes as digital or to use a lane as analog lane. Theoretically the system allow the simultaneous working of analog and digital. Therefore the switching between analog and digital is made very easy by either connecting an analog controller or connecting the digital box to the standard track connectors.

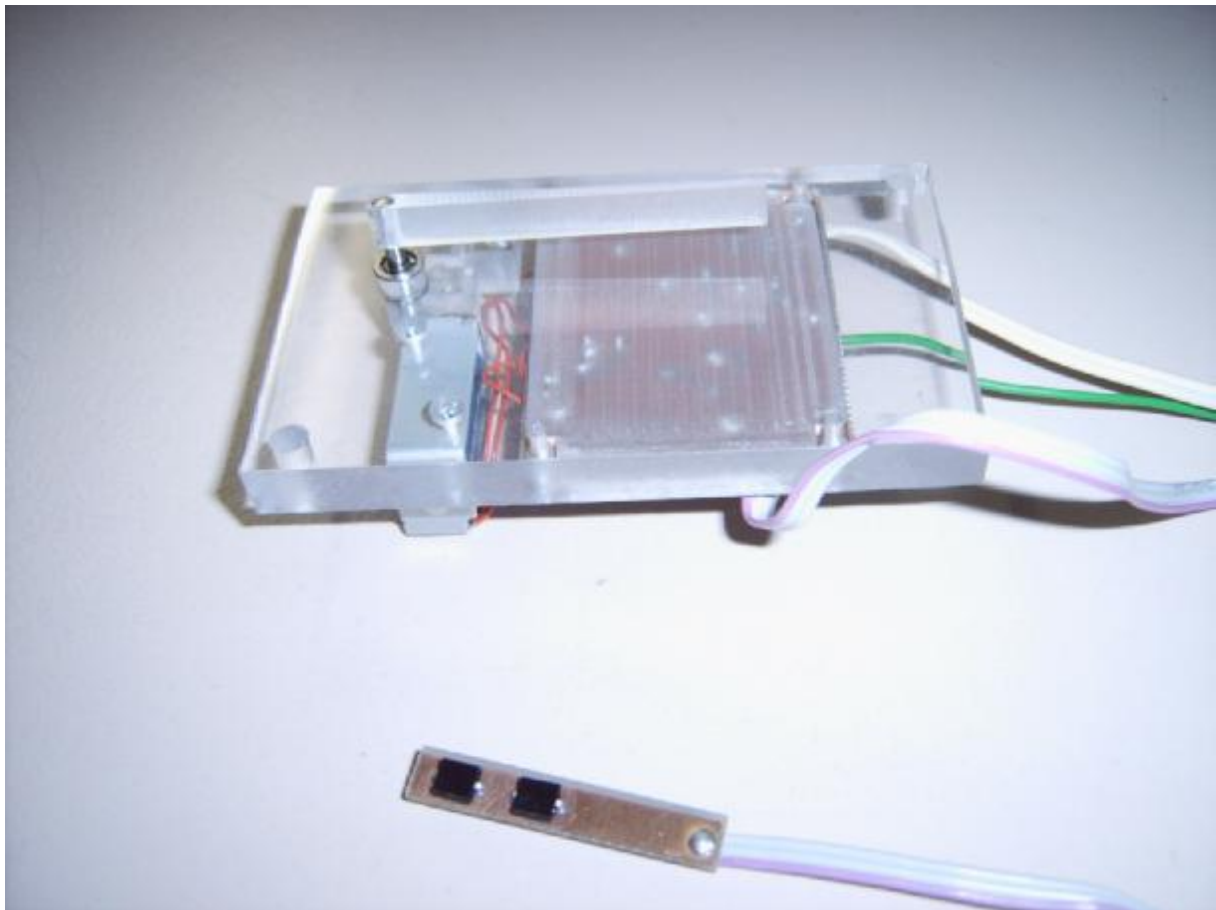
Please see the figure above to see the track connection. The main unit of the **ACD dicon** system has the same connector colors as the track connectors.(German colors) The 3 colored cables are the only cables with high current.

All controller are connected to the main ACD dicon Box via cable connectors, distribution boxes and finally driver boxes. This is the best way to position the driver very well around the track. All controller connection are low current connections. The controller do not control the car current directly. They sends a coded signal to the main unit for further preparation for driving the cars.

### Lane changer module

Lane changing is made via a special module completely pre fabricated and therefore very easy to mount. The module includes all mechanical and electronic parts ready for use.

Every car has an infra red LED which sends the direction information and the car identity to the lane sensors. The direction signal switches the lane changer to the given direction. The lane changer falls back to the default direction if no car id is detected within a few seconds. Otherwise the lane changer module follow the directions commands of the cars.



**The lane changer module with the lane sensor are ready for use components very easy to implement.**

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### Lap counting

The **ACD dicon** system allow the use of any standard analog lap counting equipment for up to 8 cars. For this reason the ACD dicon includes a car identification Module, which identify the cars via the lane sensors and outputs a pulse simulating the analog photocells. The only difference is that the Lane display of the analog lap counting software will correspondent to a car number instead to the lane number.

For smaller tracks and low car counts this solution is very practical and uses already available equipment. For new Tracks a complete Lap counting Module for up to 24 cars with PC connection will be available.

### Controller units

The **ACD dicon** system uses exclusively ACD dicon controller similar to the well known controller of the ACD pro family. All settings available in the ACD pro family are also available in the ACD dicon controller. In addition the ACD dicon controller includes a lane change push button and a switch for switching an electrical function in the car. This switch is usually used to switch the front lights of the car on or off.

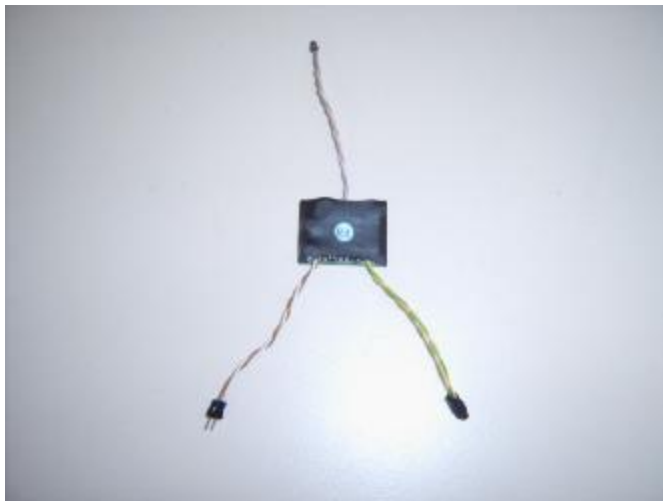


### Car decoder units

Every car must have a decoder module to convert the digital information to control the car. The ACD dicon car decoder is able to give a very fine and fast control according to the settings coming from the system and the driver controller. The decoder uses the well known ACD PWM techniques for a very good control of the car.

The decoder can handle up to 2A of continuous current and up to 5A of pulse current. The working voltage is between 10 to 20V. The decoder dimensions: (35x26x8)mm

The decoder has an output for an infra red LED for sending the lane change and car ID to the lane sensors. An extra output is also available to control an electrical function such the front light of the car.



The decoder is ready for use with the infrared LED already mounted. Also the power and motor cables are ready for use.

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### Programming of the car IDs

There are 2 Ways to program the cars to the corresponding controller.

#### Way 1

Using a special knob on the distribution unit. Plug one controller to the system and put one car on the track and press the knob. The car is programmed. This method is practical only for tracks with low count of cars or if the car IDs do not change frequently.

#### Way 2

Using a special programming unit. This unit is able to program the car to any car ID set. This way is universal and very easy to handle. In addition this unit allow a pre test of the car.



### ACD dicon is already tested

The ACD dicon system is already tested in the real racer world. The system works perfectly since April 2009 In Germany near the city of Aachen. There are also some perfect working installations owned by private persons in Germany. The test track is available to the public the Homepage of the owner of the test track is: [www.slotracing-courier.de](http://www.slotracing-courier.de)

The test track data: Wood track 4 lanes 27m 8 lane changer. The **ACD dicon** system and the test track are described in the German magazine Car on line(COL) Issue 3/2010



### **ACD dicon components and modules**

- ACD Dicon TDC (Track Data Converter) This is the main unit of the system. This unit converts the controller data to the track information's and communicates to the PC if needed.
- ACD dicon controller with contact free trigger.
- ACD dicon Car decoder (CARDEC)
- ACD dicon Car identification module (CI48) for 4 lanes and 8 car outputs
- ACD dicon lap counting unit for up to 24 cars and 8 lanes
- ACD dicon USB adapter for connecting the system to the PC
- ACD dicon lane change unit. (TS) There is 2 versions for right and left direction
- ACD dicon programming unit (PRG)
- ACD dicon Controller connection set. Cables distribution box and controller connection box
- ACD dicon Lap counter software

All modules are already available. The lap counting PC software is planned for 2011. For prices please see [www.yatronic.com](http://www.yatronic.com)

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