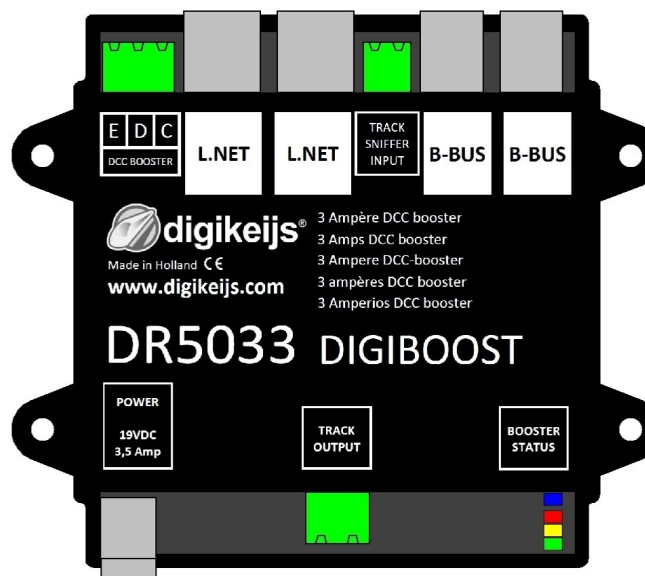


# DR5033 DIGIBOOST instruction manual

(2021-07-06)



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# 1.0 General Information

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## 1.2 Warranty and warranty conditions

All our products have a 24-month manufacturer's warranty. Please read this manual carefully.

Damage to the product caused by non-compliance with these instructions will void the warranty.

ATTENTION: The warranty is void if the housing of the product is opened.

## 1.3 Legal information

Printing errors and mistakes, technical or other changes as well as changes in the availability of individual products are expressly reserved.

Data and illustrations are non-binding. All changes to hardware, firmware and software are reserved.

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## 2.0 product overview

### 2.1 General product information

The DR5033 is a pure DCC booster capable of Railcom®. All other protocols (e.g. Märklin® Mfx®) are not supported!

The DR5033 is an H-bridge booster with various connection options (CDE booster connection, LocoNet® B, Roco® booster bus, track sniffer) to connect the DR5033 to an existing central. The configuration of the DR5033 can be customized via LNCV programming. The DR5033 can be configured to switch the polarity of the track output automatically or by magnetic command. The DR5033 can be switched on and off separately via a magnetic command and the current status can be queried by the control panel.








**Important!** The DR5033 must not be used in systems that operate according to the common ground principle. This can lead to the destruction of the booster and/or the central unit.

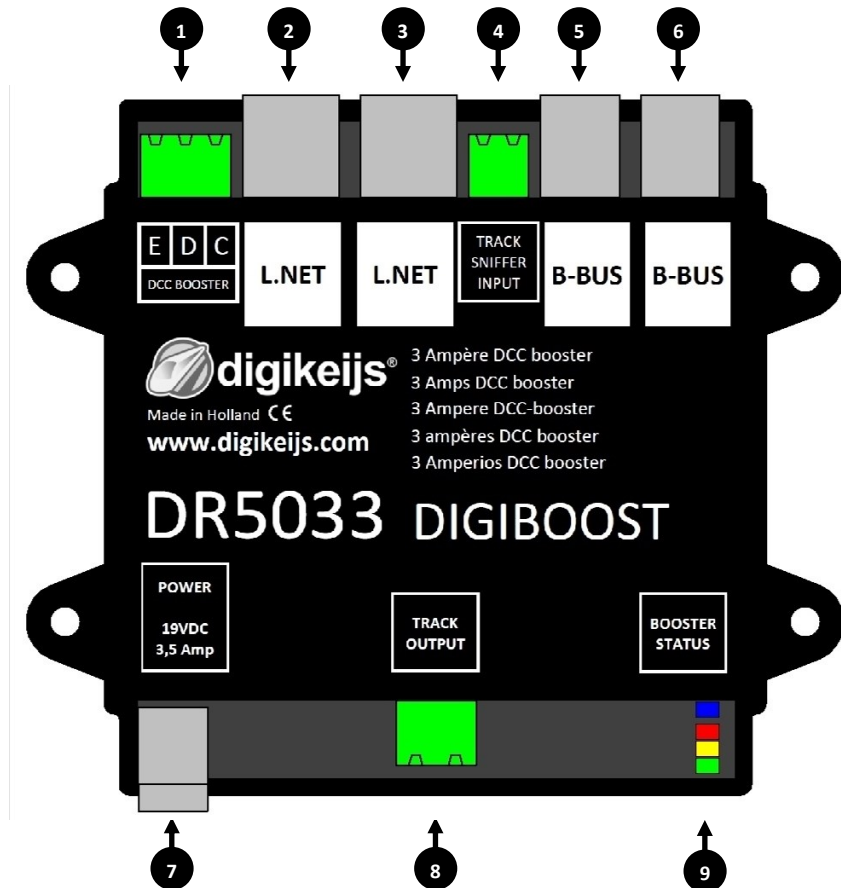
### 2.2 Technical specifications

The terminals are designed for a cross-section of 0.75mm².

	outputs	loading capacity	inputs	power supply
DR5033	Track Out	3A	LocoNet® B Track Sniffer Roco® Booster Bus	15-19V DC 3A

## 2.3 Hardware Overview

1	<b>CDE Booster connection</b> (Please check whether the CDE connection of your control panel complies with the requirements specified by Lenz®).
2	<b>LocoNet® B Connector 1</b>
3	<b>LocoNet® B Connector 2</b>
4	<b>Tack Sniffer Input</b> By connecting the Track Sniffer input to the track output of the central unit, the track signal is recognized even if none of the other input options are available. (CDE Booster connection, LocoNet® B, Roco® B Bus) can be used on the DR5033.
5	<b>Roco® Booster Bus Connector 1</b>
6	<b>Roco® Booster Bus Connector 2</b>
7	<b>power supply</b> DC 15-19V 3,5A
8	<b>Track Output</b>
9	<b>Booster Status LED</b>
	Track signal present (normal operation)
	No track signal present. (Loconet® B, B-Bus, CDE, Track Sniffer Input)
	Booster load <b>under</b> 90%. (LED becomes brighter under load)
	Booster load <b>greater</b> than 90%.
	Short circuit detected
	Stop command detected (e.g. by the control unit)
	Track Out reversed polarity. <b>Note:</b> If the blue LED lights up when driving over the booster separation points, the track output of the DR5033 is connected with reversed polarity.



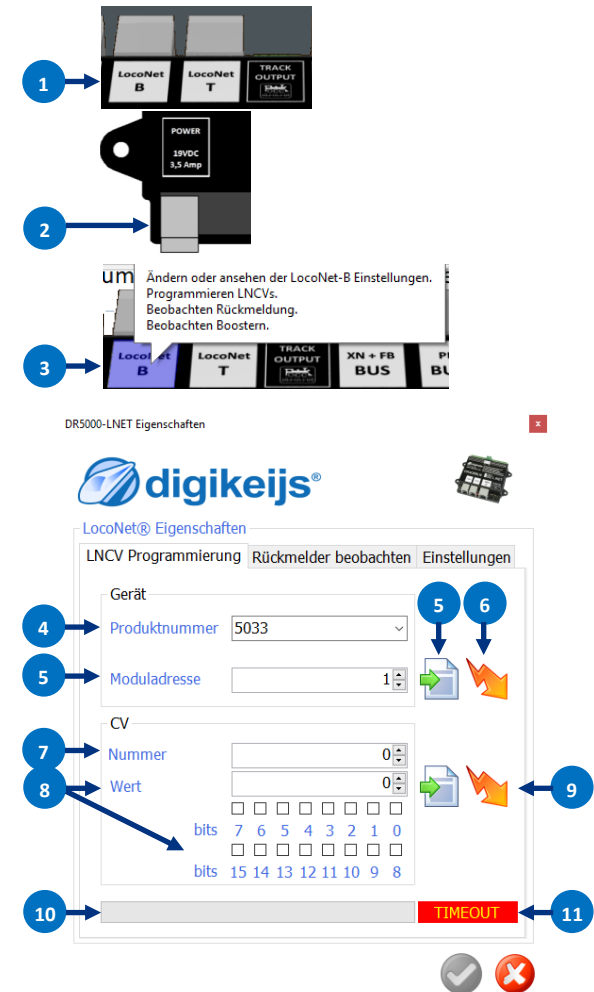
### 3.0 Adjusting the DR5033 Configuration

The DR5033 is a DCC booster whose settings (LocoNet® module address, magnetic article address, etc.) can be easily adjusted via LNCV programming. With the LNCV 3, the behaviour (short-circuit behaviour, start behaviour, automatic polarity reversal, etc.) of the booster can be adapted.

- Connect** the DR5033 to the LocoNet B port on the DR5000.  
(**Important!** if LocoNet® module addresses are identical or if the LocoNet® module address is unknown, only one DR5033 may be plugged into the LocoNet®.)
- Connect** the DR5033 to the power supply.
- Call the "**LNCV Programming**" programming menu of the DR5000 under Loconet B.
- Select** the DR5033 from the list or enter its product number numerically.
- Read out or enter the module address via the button. (Delivery State =1)
- If necessary, assign a free module address. (Delivery State =1)
- If a new address has been assigned, the newly assigned address must of course also be entered in the "Module address" selection field, otherwise further programming of the DR5033 is not possible.
- Enter the **CV number** to be changed or read in the input field.
- Enter the desired **value** or select the bits to be set.
- Use the "**Read value**" or "**Write LNCV value**" buttons to read out the LNCV or write it to the booster.
- This bar indicates the progress of the read or write process.

**Message display** of the read/write operation.

TIMEOUT                      No module detected (possibly wrong module address entered?!)  
OKAY                              Read/write operation performed correctly.



### 3.1 LocoNet® Variables (LNCV) Table

LNCV	Description	range	Default
0	Loconet module address	1-9999	1
1	Firmware version (1000 = 1,000) (Value can only be read)	-	-
3	Configuration LNCV	siehe unten	92
6	Temperature of the H-bridge in degrees °C (Value can only be read)	0-150	-
7	Current load in % (Value can only be read)	0-100	-
8	Turnout address for booster Individual switch-off	0-2048	0
11	Waiting time <b>until restart</b> after short circuit. The default value corresponds to approx. one 3/4 second (750 ms). (Setting is done in three millisecond steps.)	64-30000	244

LNCV	Description	range	Default
12	Waiting time <b>after</b> automatic polarity reversal of the track out before a short circuit is reported to the control unit. (Setting in 3 millisecond steps.)	32-250	48
13	Waiting time <b>before</b> polarity reversal or short-circuit signal. (Setting in 3 millisecond steps.)	16-250	32
14	Optional switching address for polarity reversal of the output	0-2048	0
15	Polarity reversal ON for feedback A	0-2048	0
16	Polarity reversal ON for feedback B	0-2048	0
17	Polarity reversal OFF for feedback D	0-2048	0
18	Polarity reversal OFF for feedback E	0-2048	0

### 3.2 Description Configuration LNCV

With the LNCV 3 the behaviour (short-circuit behaviour, start behaviour, automatic reverse polarity, etc.) of the booster can be adapted.

Bit	Wert	Description	Default
0	0	Not used	0
	1	Not used	
1	0	<b>Track Out</b> active as soon as an input signal is detected.	0
	2	<b>Track Out</b> active as soon as the GO/Stop button of the control unit is pressed or the connected switching address (LNCV 8) is switched to green.	
2	0	Booster does not send 'GPON/GPOFF' L.NET report on short circuit. <b>Automatic</b> short-circuit repair <b>is enabled</b> .	4
	4	Booster sends 'GPON/GPOFF' L.NET report to headquarters. The <b>central</b> determines when the track out is switched on again.	
3	0	Not used	8
	8	Not used	

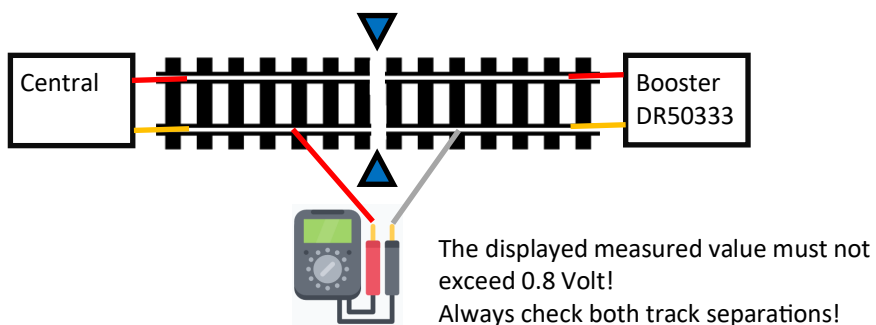
Bit	Wert	Description	Default
4	0	Booster does not send a special LocoNet® message in case of short-circuit shutdown.	16
	16	Booster sends a LocoNet® message in case of a short circuit so that the central unit can display which booster has been switched off.	
5	0	Track Out active without output polarity reversal (blue LED off)	0
	32	Track Out active Output reversed polarity (blue LED on)	
6	0	Automatic polarity reversal off	64
	64	Automatic polarity reversal on	
7	0	Not used	0
	128	Not used	

## 4.0 Connection examples

The connection examples shown here represent only a small part of the possibilities for connecting the DR5033 to different control panels. Please note that there are of course further possibilities and special cases which cannot be shown here!

### 4.1 Important notes on using the DR5033.

- The configuration is done via LocoNet®.
- The DR5033 can be used with control panels that use an H-bridge to generate track signals.
- The same voltage must be set on the power supply units of the boosters and control panels.
- When using the CDE booster connection on the DR5033, it must be ensured that the CDE connection of the central unit meets the specifications of Fa. Lenz®.
- Operation of the DR5033 in conjunction with control panels (e.g. Uhlenbrock®, Piko® Smart ControllerLigth®, etc.) which operate according to the "common ground principle" is not possible on the same circuit. This can lead to damage to components. Even a busbar separation on both sides is not sufficient! Please note connection example 4.9.
- The tracks must always be separated on both sides between the booster and central areas.
- The maximum number of boosters on the Roco® B-Bus® is limited to **four**.
- The transition voltage between the booster ranges must always be less than **0.8 Volt**. This can easily be checked with a multimeter (setting the measuring range to AC alternating voltage). Both rail separations must **always** be checked. If the value of 0.8 Volt is exceeded, the input voltage of the booster or the voltage setting of the central unit must be adjusted.





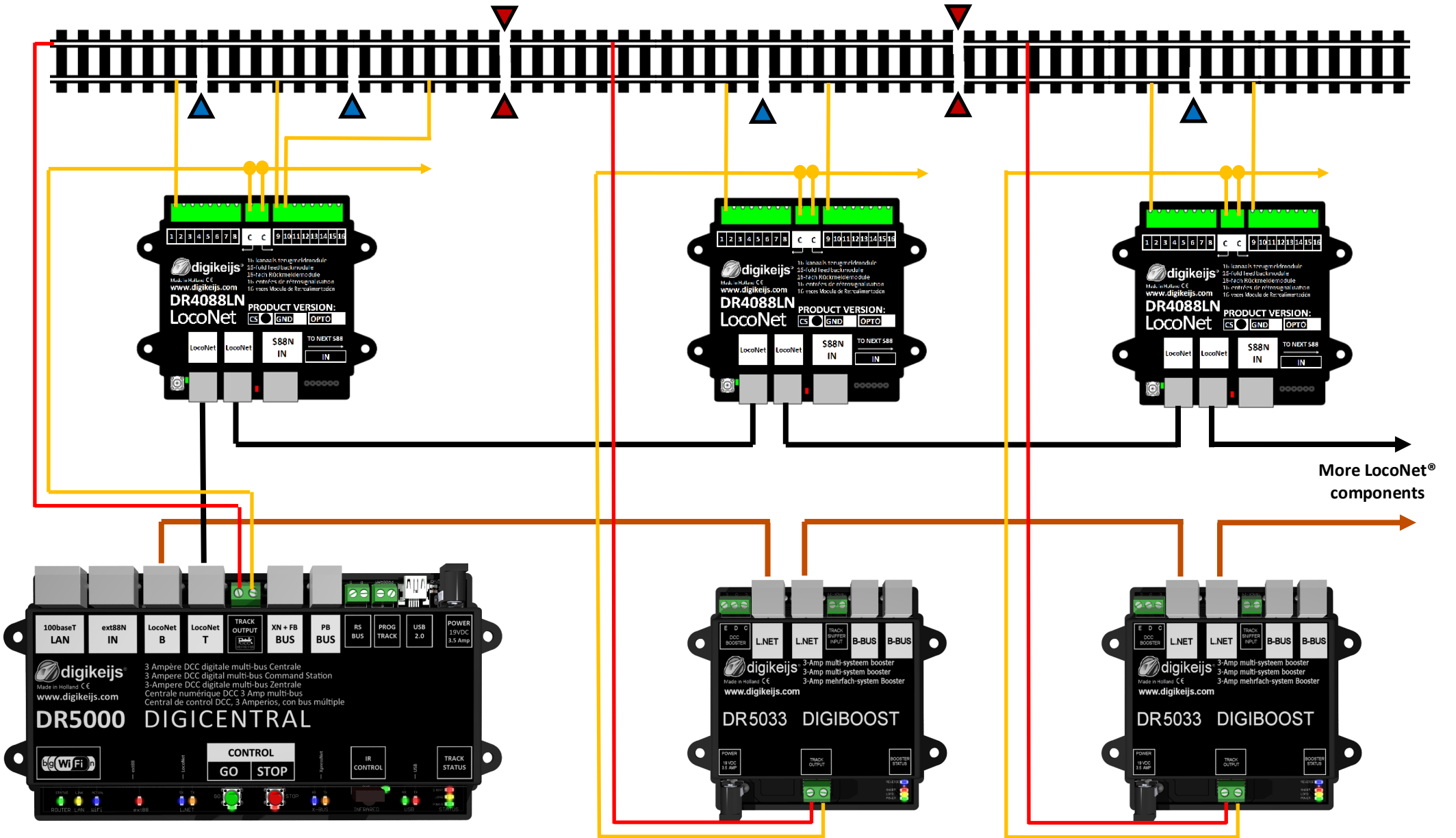
## 4.2 Tested central units and connection types

Central	Connection Possibilities Central		special features
DR5000			
	B-Bus®		No Railcom®, max. 4 boosters possible.
	LocoNet® „B“	<b>Our recommendation!</b>	<b>Full booster</b> connection. <b>Railcom®</b> is generated by the DR5000 and passed on to the booster. The status of the DR5033, for example, can be queried via LocoNet®. In addition, the booster can be individually switched off and on again via a magnetic article address.
Roco®/Fleischmann® Z 21®			
	B-Bus®	<b>Our recommendation!</b> (if the number of 4 Booster is sufficient)	No Railcom®, max. 4 boosters possible.
	Sniffer Input	<b>Our recommendation!</b>	<b>Railcom®</b> is recognized and passed on by the booster.
	LocoNet®		Since the Z 21® has no LocoNet® "B" connection, the DR5033 can only be configured. Operation via LocoNet® „B“ on the Z 21 is therefore not possible.
Roco®/Fleischmann® z21®/z21®Start			
	B-Bus®	<b>Our recommendation!</b> (if the number of 4 Booster is sufficient)	No Railcom®, max. 4 boosters possible.
	Sniffer Eingang	<b>Our recommendation!</b>	<b>Railcom®</b> is recognized and passed on by the booster.

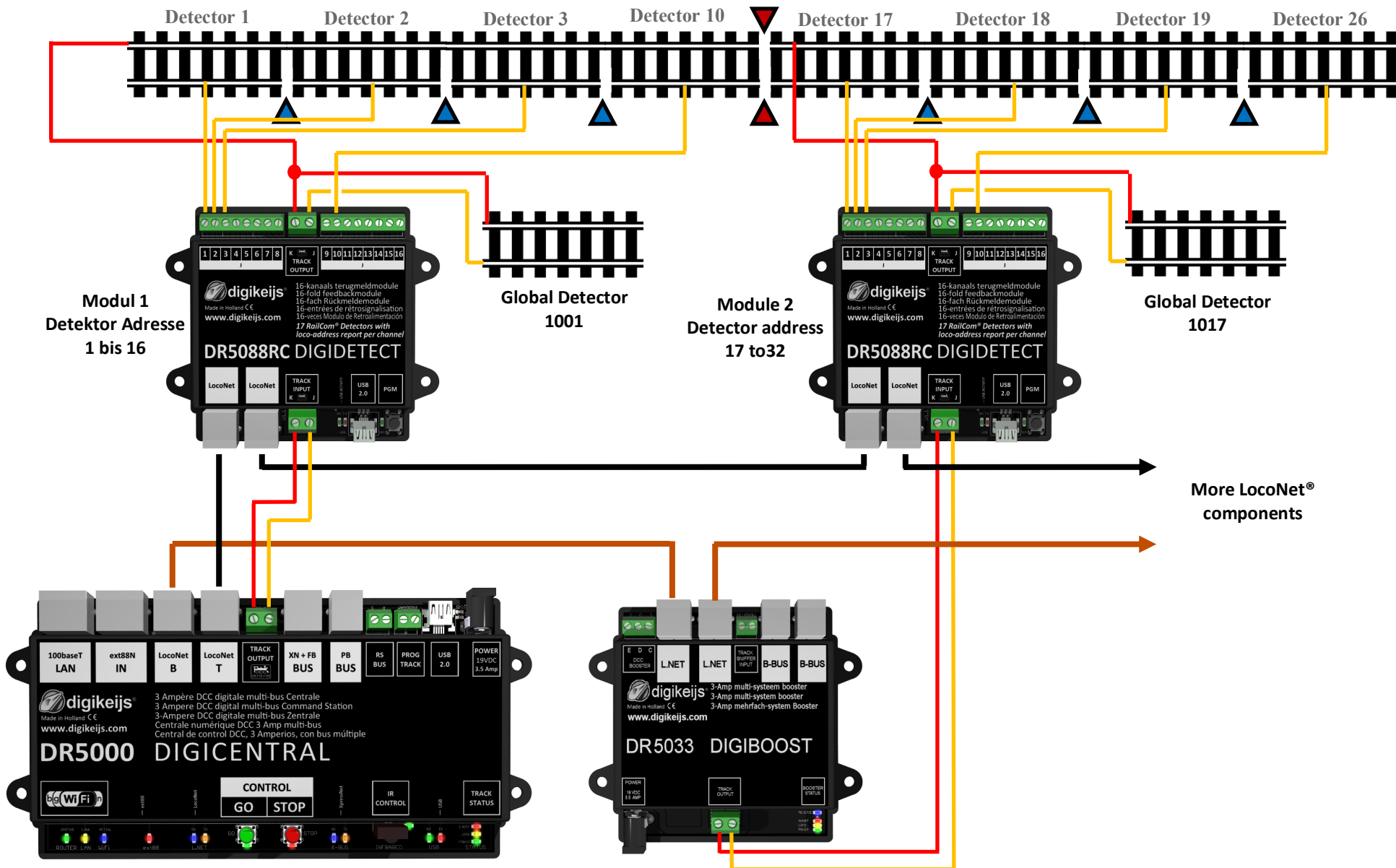
Central	Connection Possibilities Central		special features
Lenz®			
	CDE	<b>Our recommendation!</b>	
	Sniffer Input		
Uhlenbrock® Intellibox, Intellibox 2, Intellibox Basis, etc.			
	LocoNet® „B“	<b>Our recommendation!</b>	<p><b>Full booster</b> connection.  <b>Railcom®</b> is generated by the central unit and passed on to the booster. The status of the DR5033, for example, can be queried via LocoNet®. In addition, the booster can be individually switched off and on again via a magnetic article address.</p> <p><b>Important!</b> As Uhlenbrock® works according to the <b>Common Ground</b> principle, the track output DR5033 must never be used with the track output of the central unit on the same circuit. Even a track separation on both sides is <b>not sufficient!</b></p>
Piko® Smartcontrol light® Uhlenbrock® Daisy®	LocoNet® „B“	<b>Our recommendation!</b>	<p><b>Full booster</b> connection.</p> <p><b>Important!</b> AS Piko®/Uhlenbrock® works according to the <b>Common Ground</b> principle, the track output DR5033 must never be used with the track output of the central unit on the same circuit. Even a track separation on both sides is <b>not sufficient!</b></p>

Please note that it is not possible for us to test all central/booster combinations available on the market.

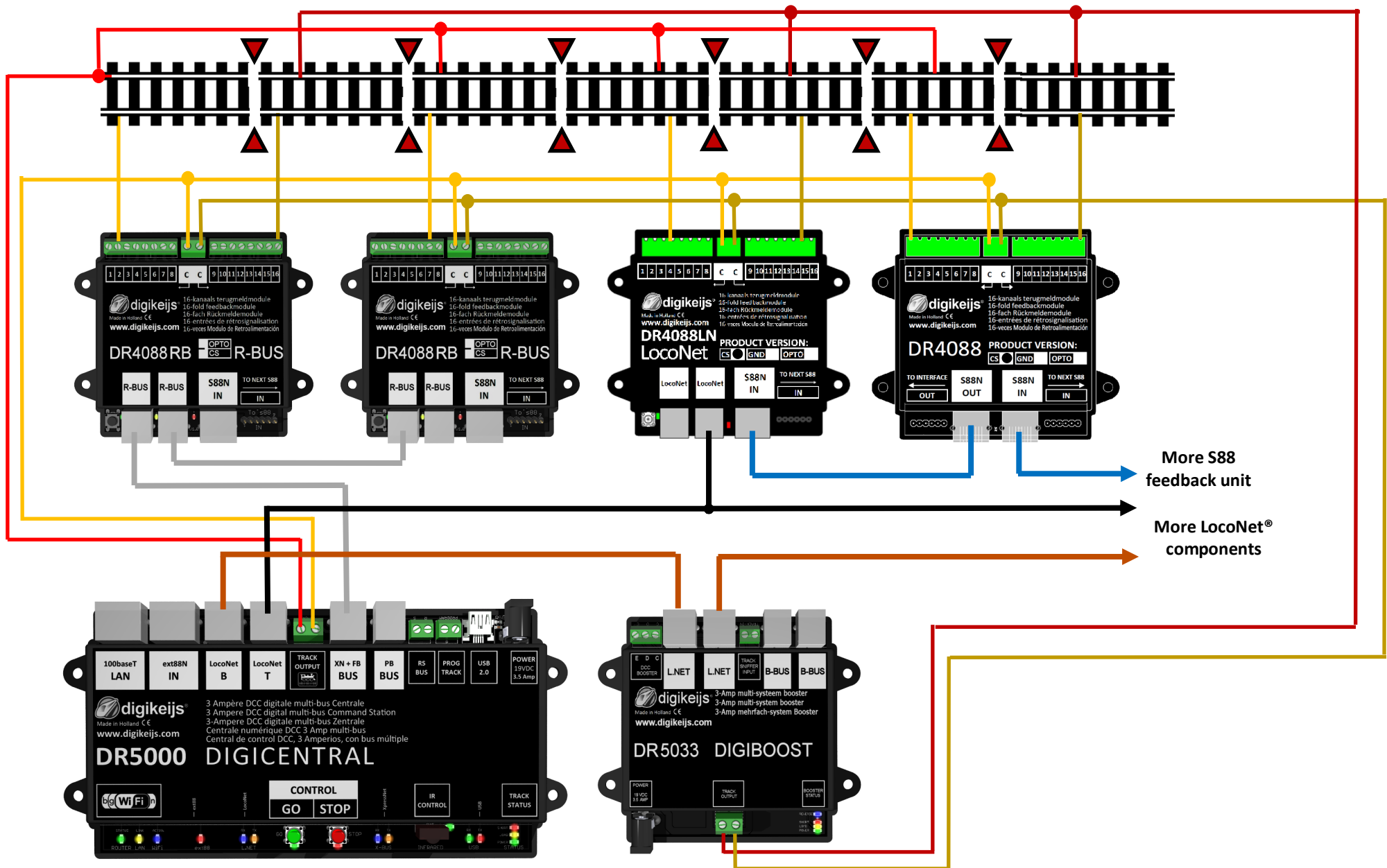
### 4.3 DR5000, DR5033 Boosters and feedback modules DR4088



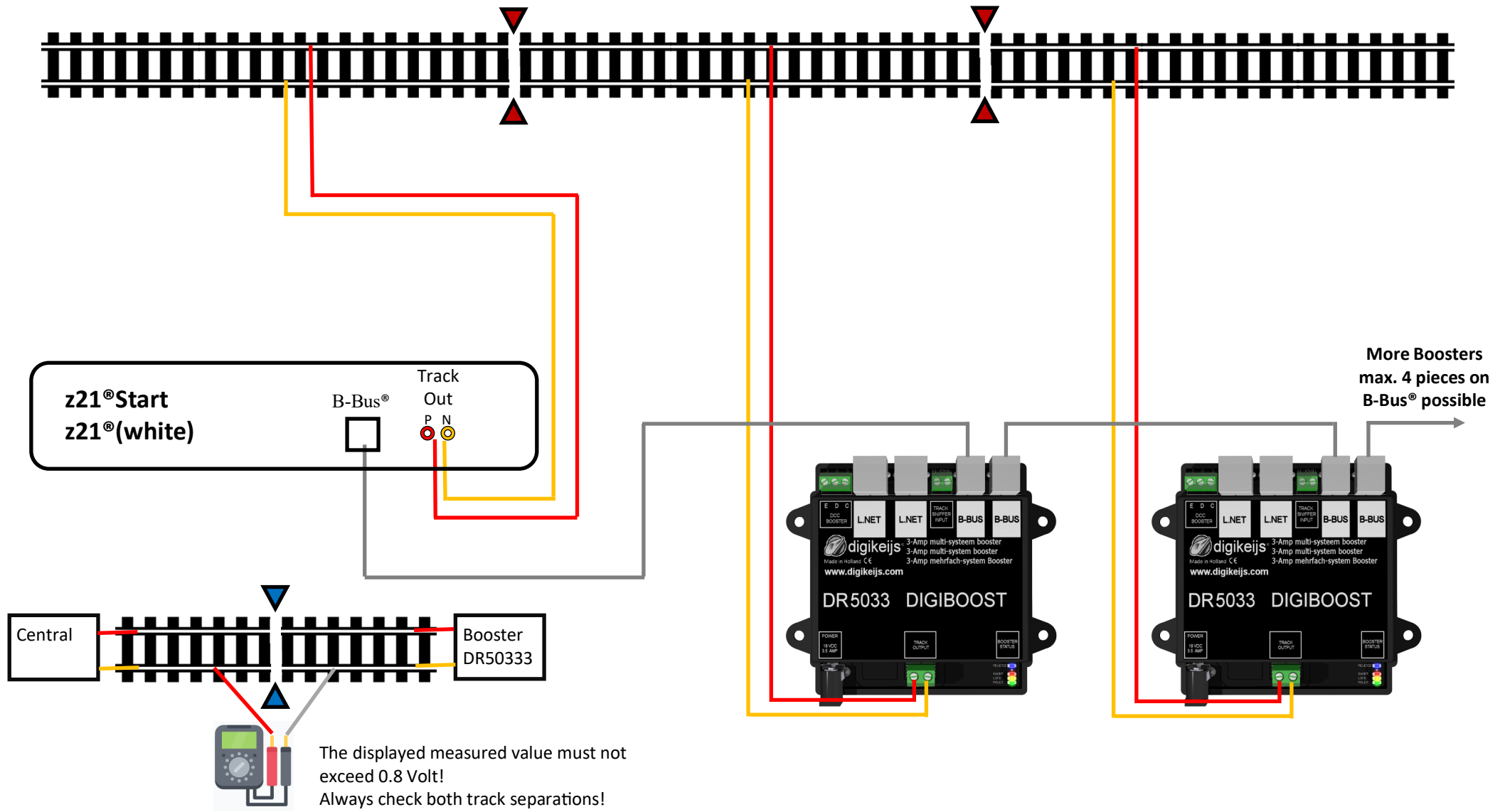
## 4.4 DR5000, DR5033 Booster and Feedback Modules DR5088RC



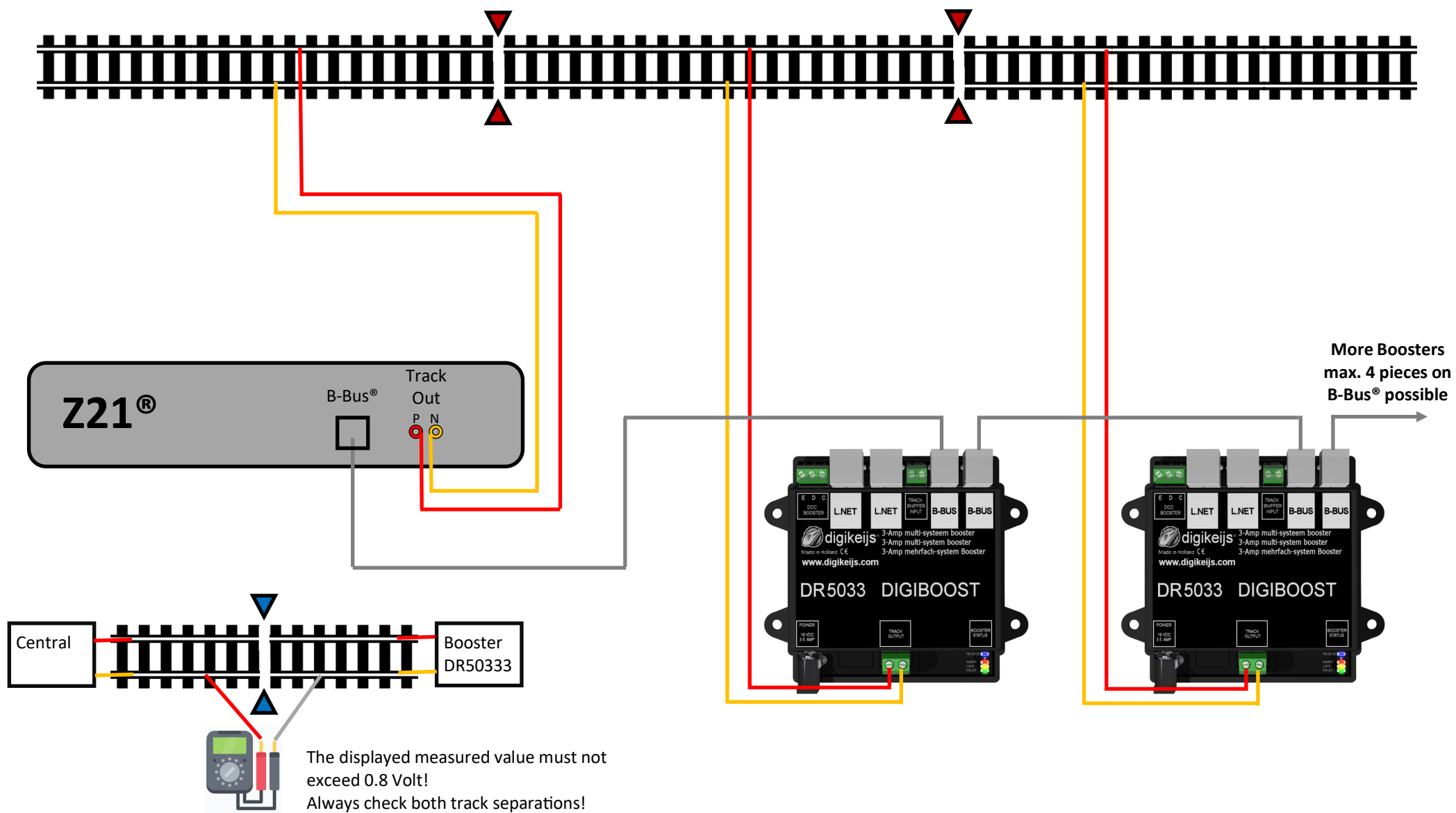
## 4.5 DR5000, DR5033 Booster and Feedback Modules DR4088xx



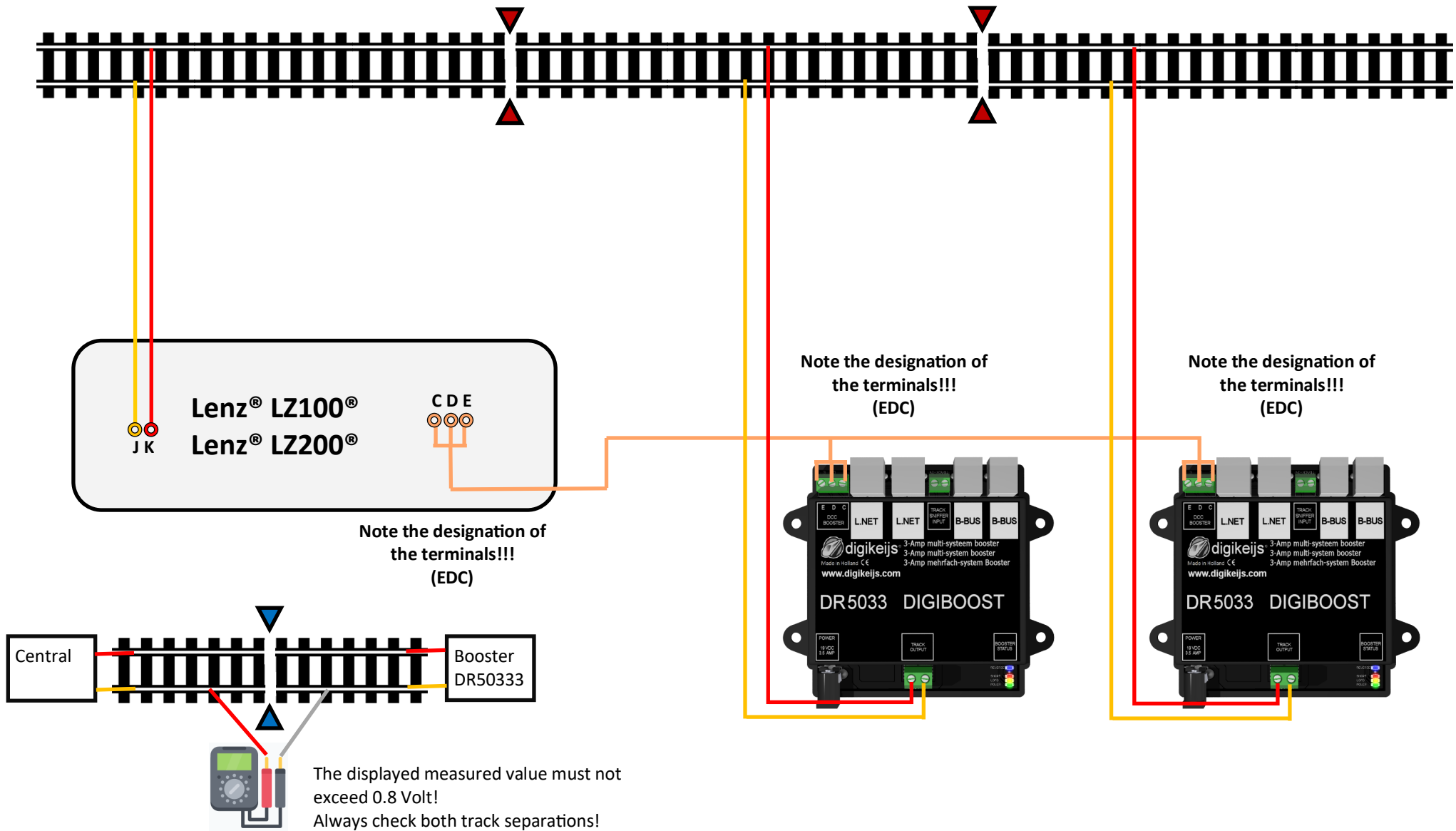
## 4.6 Roco® z21®(white), z21Start®, DR5033 Connection via the B-Bus®



## 4.7 Roco® Z21®, DR5033 Connection via the B-Bus

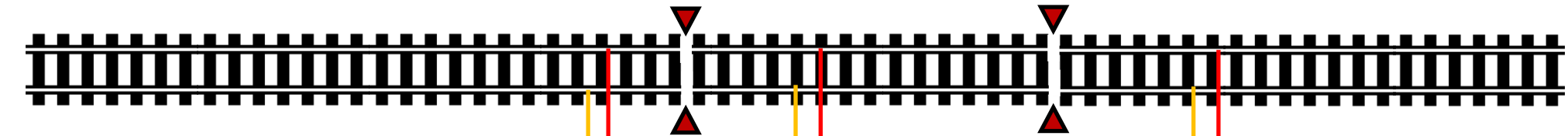


## 4.8 Lenz Zentrale®, DR5033 via the CDE connector

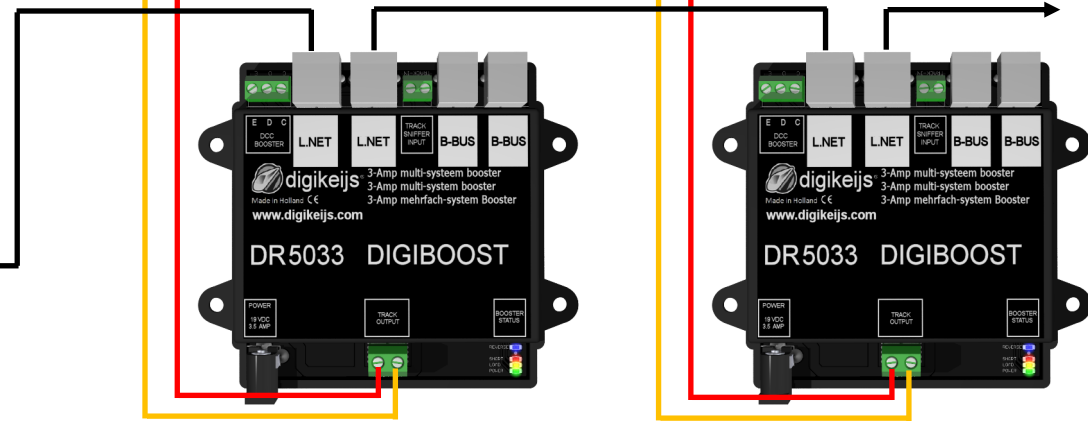
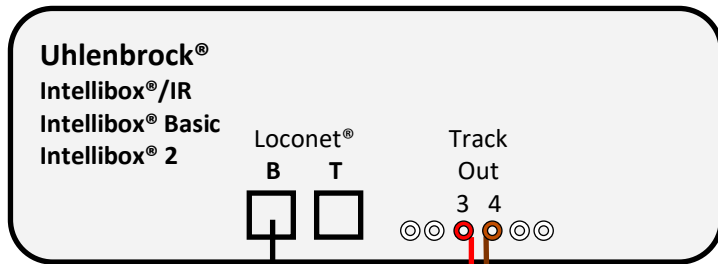




## 4.9 Uhlenbrock Intellibox®, DR5033 connection via LocoNet® B



The track output of the Intellibox® **may not be** connected with the the same circuit that is formed by the boosters. Even a rail separation on **both** sides is **not** sufficient!  
If this is not observed, damage to components may occur!



More LocoNet® components →

## 4.10 Any H-bridge control panel, DR5033 connection via Track Sniffer

