

DR4024 servo decoder Instruction manual



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Please note!

This manual contains currently only the basic information and will be extended step by step. Suggestions, improvements, additions, comments or suggestions are always welcome.

support@digikeijs.com

1.2 Warranty and warranty conditions

All our products have a 24-month manufacturer's warranty. Read these operating instructions 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.

We reserve the right to change the design of the product, software and/or firmware without prior notice.

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2.0 Product overview

2.1 General product information

The DR4024 is a multiprotocol decoder that automatically detects DCC and MM.

With the function mapping via CV programming it is possible to realize all imaginable tasks. The DR4024 is a servo decoder with four servo outputs.

Each servo output can be programmed to move to four different positions. The DR4024 also has four additional switching outputs which can be used, for example, for switch polarization or for controlling St. Andrew's crosses and much more.

The DR4024 switches off the control of the servos when the position is reached, thus guaranteeing that no unnecessary power is consumed.

2.2 Technical specifications

The connection terminals for power and signal (track voltage) are designed for a cross-section of 0.5mm².

	Number of Outputs	Protokoll	Loading Capacity Out 5 - Out 8	Load capacity of the servo outputs	power supply voltage
DR4024	4 x Servo (S1-S4) 4x switching output (Out 5 - Out 8)	DCC MM	2 A	Per output max 1A (When operating several servos simultaneously S1 and S2 total 1A or S3 and S4 total 1A)	12-18V DC Minimum recommendation 12V DC 2A 12-18V AC

Note on power supply:

When using "old" transformers (AC output), under certain circumstances there may be malfunctions in the operation of the servos.

For this reason we generally recommend the use of switching power supplies with at least 12V (DC) output voltage (DC voltage) and 2A output power.

2.3 Hardware Overview

- 1 Connection S1 **Servo 1** (Output 1)
- 2 Connection **Out 5** (Output 5)
- 3 Connection S2 **Servo 2** (Output 2)
- 4 Connection **Out 6** (Output 6)
- 5 Connection S3 **Servo 3** (Output 3)
- 6 Connection **Out 7** (Output 7)
- 7 Connection S4 **Servo 4** (Output 4)
- 8 Connection **Out 8** (Output 8)
- 9 Power Anschluss
- 10 **Green LED**
Display Supply voltage present
- 11 programming button
- 12 **Red LED**
Display programming mode
(glows constantly)
Display switching command is executed
(lights up as long as movement is in progress)
- 13 Signal (rail connection)



3.0 Programming

If the power input and the signal input of the DR4024 are connected to each other and are connected to the siding of the control unit, the control unit may shut down due to overload.

It is better to use a switching power supply (DC) with at least 12V 2A for adjustment work and normal operation. You should always keep in mind that some servos have a "high" current requirement, which can lead to the central unit being switched off during operation or setting.

Basic information about programming the DR4024.

Please pay attention to these points as otherwise the programming may fail or errors may occur.

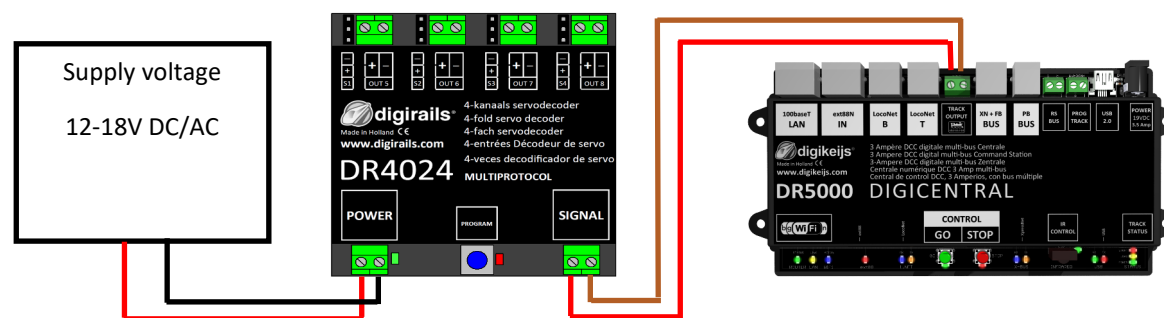
- CV programming is always possible on the programming track (if available).
- Some command stations switch off the programming track, which makes programming the DR4024 on the programming track somewhat more difficult.
- With some central units it comes with the readout of CV's at the programming track again and again to problems that the max. current at the programming track, which is available, is too small. Then disconnect the connected servos from the DRR4024.
- To read CV's on the programming track, the connections POWER and SIGNAL must be connected to the programming track of the central unit.
- Please disconnect the external power supply at the DR4024.
- POM programming is always possible on the main track.
- CV **readout** via **POM** or **Railcom**[®] is not possible.

3.1 Programming the turnout address

The turnout addresses are always assigned by a turnout command!!!

Make sure the DR4024 is powered from the decoder's power connector. It is best to use a switching power supply with at least 12V DC output voltage and 2A output power. The signal connection of the decoder must be connected to the main track output of your control panel!

1. Call up the desired magnetic article address which the DR4024 is to receive as the start address at the central unit, handset controller, app, etc.
2. Press the programming button on the DR4024, the red LED will light up continuously.
The decoder is now in programming mode.
3. The next step is to switch the desired turnout address with the control panel, the app or the handset control.
DR4024 as the start address.
4. The programming mode is automatically terminated after switching the turnout address.
The red LED goes out again to indicate that the programming mode has been exited.
5. The DR4024 now occupies a maximum of 8 addresses starting with the first switched turnout address.

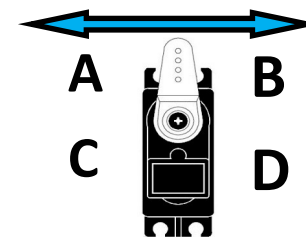


The **start address** (turnout address) for the DR4024 is always assigned via a **turnout command** and **not via the CV1!!!**

If the CV1 is nevertheless written with an address, the decoder can **no longer be programmed with the locomotive address 9999!**

3.2 Programming the servo positions A-D

1. Make sure the DR4024 is powered from the decoder's power connector. It is best to use a switching power supply with at least 12V DC output voltage and 2A output power. The signal connector of the DR4024 must be connected to the main track output of your control panel!
2. A locomotive with **address 9999** and 128 **speed steps DCC** must be defined in the central unit, multi mouse, app etc.. This locomotive address can be used to control and program the DR4024 like a locomotive.
3. Select the locomotive with the address 9999 at the central station, multi mouse, app, etc. Switch function **F0** on and off again to activate the locomotive in the control center. If this procedure is not carried out, some command stations do not recognize that the locomotive 9999 has been called. Then it is not possible to carry out the following programming!
4. Make sure that the functions F0 (light), F1, F2, F3 and F4 are switched off on the control panel, App or on the handset control. Set the speed control knob at the control panel, app or handset to **zero speed**.
5. Now actuate the servo that you want to set (via the control panel by means of the switch address). The selected servo will now move to the switched position.
6. Press the programming button on the DR4024. The red LED now lights up continuously and indicates that the DR4024 is in "Programming Mode" is located. The servo just actuated now moves to the neutral position (centre position of the servo).
7. Move the speed controller (forwards or backwards) and set the servo to the desired **position A** (left position A).
8. Switch the **F1** function on the speed controller on and off again to save this position A in the DR4024.
Important: when saving the positions in the decoder, the red LED goes out briefly to indicate that the position has been saved.
9. Turn the speed controller (forwards or backwards) and set the servo to the desired **position B** (right position B).
10. Switch function **F2** on the speed controller on and off again to save this position B in the DR4024.
11. If you only want to change or set positions A and B, proceed to step 16.
12. Turn the speed controller (forwards or backwards) and set the servo to the desired **position C** (left position C).
13. Switch the function **F3** on the speed controller on and off again to save this **position C** in the DR4024.
14. Turn the speed controller (forwards or backwards) and set the servo to the desired position D (right position D).
15. Switch the function **F4** on the speed controller on and off again to save this **position D** in the DR4024.
16. Press the programming button on the DR4024 decoder to exit programming mode. The red LED now goes out and indicates that the programming mode has been exited.
17. Repeat the above steps for each servo output to adjust.

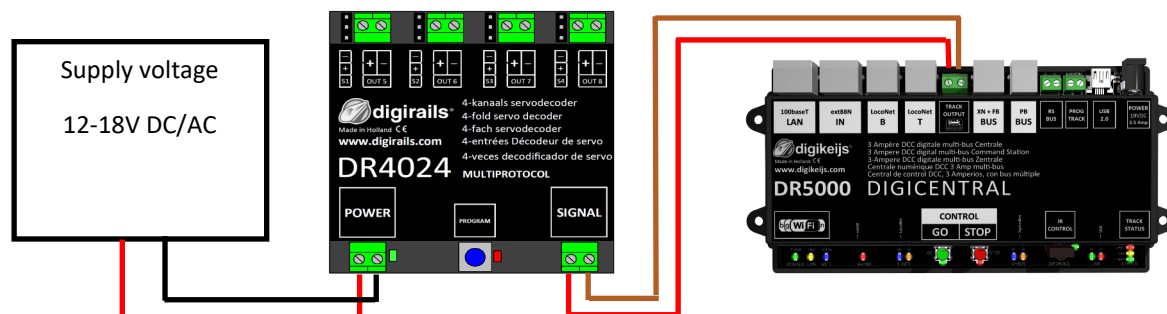


➔ Instead of ending the programming mode with step 16 you can select the next servo by switching F0 on and off (switching the light on and off again) and continue with step 7 to program the next servo at the decoder.

3.3 Programming of CV's via POM (main track programming)

Make sure the DR4024 is powered from the decoder's power connector. The **green LED** next to the power connector must now light up permanently. It is best to use a switching power supply with at least 12V DC output voltage and 3A output power. The signal connection of the decoder must be connected to the main track output of your control panel! The DR4024 cannot be read out via Railcom®!

1. A locomotive with **address 9999** and **128 speed steps DCC** must be defined in the central unit, multi mouse, app etc..
The DR4024 can be programmed similar to a locomotive decoder using this locomotive address.
2. Select the locomotive with the address 9999 at the central station, multi mouse, app, etc.
Switch the function **FO** (light) on and off again to activate the locomotive in the control panel.
3. Press the programming button on the DR4024. The red LED is now lit continuously and indicates that the DR4024 is in "programming mode".
4. Select the CV Programming (POM) function in your control panel, app or handset.
(For further information on CV byte or CV bit programming, please refer to the operating instructions of your control panel)
5. Now the desired CV value can be written to the DR4024 with the respective function Write POM of the central, app or handset controller.
6. An infinite number of CV's can be sent one after the other to the DR4024.
7. To exit the programming mode of the DR4024, the programming button must be pressed again.
The red LED goes out and indicates that the programming mode has been terminated.



Attention!!! If for any reason the address 9999 required for programming has been changed in the DR4024, the reset must be carried out via the programming track, point 3.6.

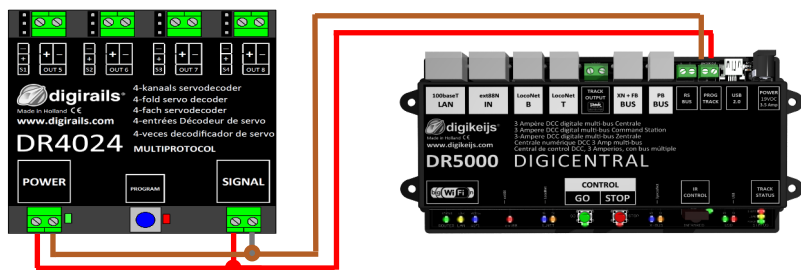
The **start address** (turnout address) for the DR4024 is always assigned via a **turnout command** and **not via the CV1!!!**
If the CV1 is nevertheless written with an address, the decoder can **no longer be programmed with the locomotive address 9999!**

3.4 Programming of CV's via the programming track

Connect the signal and power connections of the DR4024 to the programming track connection of your control panel.

Please note that reading out and programming the DR4024 via the programming track only works if the central unit does not switch off the programming track! Therefore, before attempting programming, check that the green LED next to the power connector is lit. Only if this is the case can the DR4024 be successfully programmed as described in this section. **If the green LED does not light up, refer to section 3.6 of this manual.**

1. Connect the signal and power connections of the DR4024 to the programming track of the control panel.
2. Now check whether the green LED next to the power connector is permanently lit.
If the green LED does not light up, refer to section 3.6 of this manual.
3. A locomotive with **address 9999** and **128 speed steps DCC** must be defined in the central unit, multi mouse, app etc..
The DR4024 can be programmed similar to a locomotive decoder using this locomotive address.
4. Select the locomotive with the address 9999 at the central station, multi mouse, app, etc.
Switch the function **F0** (light) on and off again to activate the locomotive in the control panel.
5. Press the programming button on the DR4024. The red LED is now lit continuously and indicates that the DR4024 is in "programming mode".
6. Select the CV programming function via the programming track in your central, app or handset controller.
(For further information on CV byte or CV bit programming, please refer to the operating instructions of your control panel)



The **start address** (turnout address) for the DR4024 is always assigned via a **turnout command** and **not via the CV1!!!**

If the CV1 is nevertheless written with an address, the decoder can **no longer be programmed with the locomotive address 9999!**

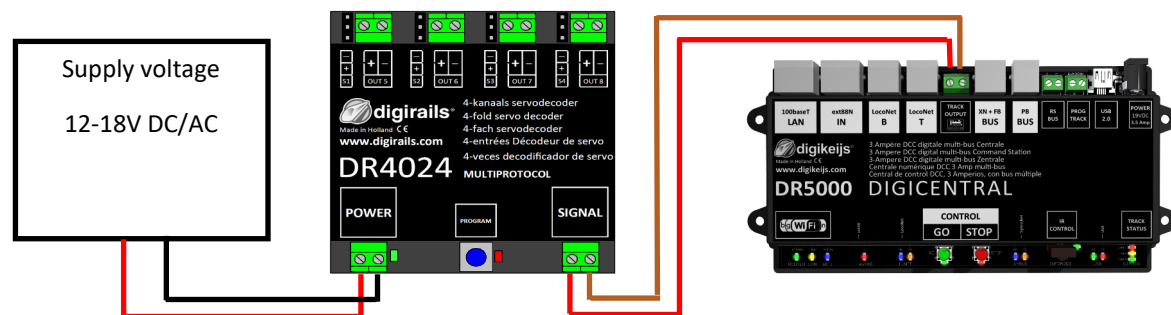
3.5 Reset DR4024 to Factory Settings(Main Track POM programming)

Connect the signal and power connectors of the DR4024 to the main track connector of your control panel. The **green LED** next to the power connector must now light up permanently. Alternatively, the power connection can also be supplied with an external power supply (min 12V DC 2A).

The DR4024 cannot be read out via Railcom®!

1. A locomotive with **address 9999** and **128 speed steps DCC** must be defined in the central unit, multi mouse, app etc.
The DR4024 can be programmed similar to a locomotive decoder using this locomotive address.
2. Select the **locomotive** with the **address 9999** at the central station, multi mouse, app, etc.
Switch the function **FO** (light) on and off again to activate the locomotive in the control panel.
3. Press the programming button on the DR4024. The red LED now lights up continuously and indicates that the DR4024 is in "programming mode".
is located.
4. Select the CV Programming (POM) function in your control panel, app or handset.
(For further information on CV byte or CV bit programming, please refer to the operating instructions of your control panel)
5. Now write the CV 8 with the decimal value 8 to reset the DR4024.
6. Exit the programming mode by pressing the programming button on the DR4024.
The red LED goes out and indicates that the programming mode has been terminated.
Important! Otherwise the DR4024 starts in programming mode again.
7. Now disconnect the power and signal connections from the main track

Attention! Wait approx. 30 seconds before powering the DR4024 again and restoring the siding.



The **start address** (turnout address) for the DR4024 is always assigned via a **turnout command** and **not via the CV!!!**
If the CV1 is nevertheless written with an address, the decoder can **no longer be programmed with the locomotive address 9999!**

3.6 Reset DR4024 to Factory Settings (Programming Track)

The reset via the programming track should only be done if the reset via the POM programming did not work.

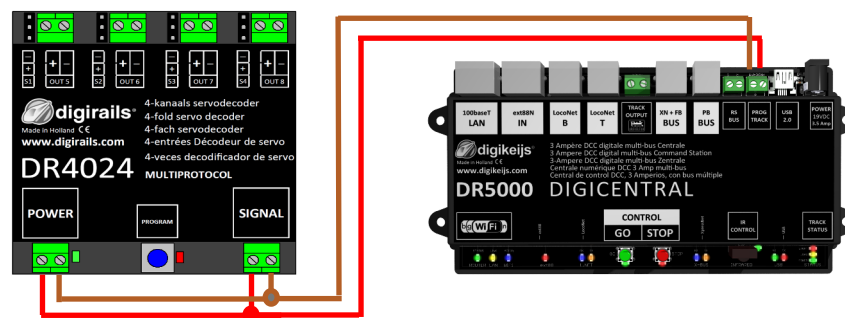
Connect the signal and power connections of the DR4024 to the programming track connection of your control panel.

Please note that reading out and programming the DR4024 via the programming track only works if the central unit does not switch off the programming track! Therefore, before attempting programming, check that the green LED next to the power connector is lit. Only if this is the case can the DR4024 be successfully programmed as described in this section. **If the green LED does not light up, refer to section 3.7 of this manual.**

1. Connect the signal and power connections to the programming track of the control panel.
2. Now check whether the green LED next to the power connector is permanently lit.
If the green LED does not light up, refer to section 3.7 of this manual.
3. Press the programming button on the DR4024. The red LED now lights up continuously and indicates that the DR4024 is in "programming mode" is located.
4. Select the CV programming function via the programming track in your central, app or handset controller.
(For further information on CV byte or CV bit programming, please refer to the operating instructions of your control panel)
5. Now write the CV 8 with the decimal value 8 to reset the DR4024.
6. Exit the programming mode by pressing the programming button on the DR4024.
The red LED goes out and indicates that the programming mode has been terminated.
Important! Otherwise the DR4024 will restart in programming mode.
7. Now disconnect the power and signal connections from the programming track.

Attention! Wait approx. 30 seconds before powering the DR4024 again and restoring the siding.

The DR4024 is now reset to factory settings. The POM address was reset to 9999 again and the DR4024 has the magnetic article address 1 again. By switching the magnetic article address 1 it can be checked whether the RESET was successful.



3.7 Special feature CV programming for control panels that Switch off the programming track

Some control panels (Uhlenbrock® Basis®, Daisy 2® Startset, Piko® SmartControl® light, etc.) only switch on the supply voltage to the programming track during programming. The **green LED** next to the power connector of the DR4024 indicates whether the programming track always outputs voltage. If this does not light up continuously, the programming track is switched off. This leads to the DR4024 requiring a different programming or resetting procedure than usual.

This procedure is described in this section.

1. Now that you have determined that the **green LED** next to the power connector is not permanently lit, disconnect the **POWER** and **SIGNAL** connectors from the **programming track**.
2. Connect the **POWER** and **SIGNAL** connectors to **the main track** of your control panel.
Now the **green LED** next to the **POWER** connector should light up permanently.
3. Now press the programming button on the DR4024.
The **red LED** will light to indicate that the DR4024 is in programming mode
4. Now disconnect the **POWER** and **SIGNAL** connectors from the **main track** (Track Out).
5. Now reconnect the **POWER** and **SIGNAL** connections to the **programming track** of your control panel.
The **green** and **red** LEDs now go out because the **programming track** is not constantly supplied with power.
The programming mode of the DR4024 remains unchanged.
6. Select the CV programming function via the **programming track** in your central, app or handset controller and program the desired CVs one after the other.
(Further information on CV byte or CV bit programming can be found in the operating manual of your control panel)
After you have successfully changed all desired CV's, you must exit the programming mode of the central unit before proceeding with the next step.
7. Disconnect the **POWER** and **SIGNAL** connections from the **programming track**.
8. Connect the **POWER** and **SIGNAL** connectors to the main track of your control panel.
Now the **green LED** next to the **POWER** connector and the **red LED** both light up again.
The **red LED** indicates that the DR4024 is still in programming mode.
9. Now press the programming buttons on the DR4024. The **red LED** goes out and the programming mode is terminated.

3.8 Reset DR4024 to factory settings for control units that switch off the programming track

Some control panels (Uhlenbrock® Basis®, Daisy 2® Startset, Piko® SmartControl® light, etc.) only switch on the supply voltage to the programming track during programming. The **green LED** next to the power connector of the DR4024 indicates whether the programming track always outputs voltage. If this does not light up continuously, the programming track is switched off. This leads to the DR4024 requiring a different programming or resetting procedure than usual. This procedure is described in this section.

1. Now that you have determined that the **green LED** next to the power connector is not permanently lit, disconnect the **POWER** and **SIGNAL** connectors from the **programming track**.
2. Connect the **POWER** and **SIGNAL** connectors to the **main track** of your control panel. Now the **green LED** next to the **POWER** connector should light up permanently.
3. Now press the programming button on the DR4024. The **red LED** will light to indicate that the DR4024 is in programming mode.
4. Now disconnect the **POWER** and **SIGNAL** connectors from the **main track** (Track Out).
5. Now reconnect the **POWER** and **SIGNAL** connections to the **programming track** of your control panel. The **green** and **red LEDs** now go out because the programming track is not constantly supplied with power. The programming mode of the DR4024 remains unchanged.
6. Select the CV programming function via the **programming track** in your central, app or handset controller. *(Further information on CV byte or CV bit programming can be found in the operating manual of your control panel)*
To reset to factory settings, the decimal value 8 must be written to CV8.
After you have described the CV 8, you must exit the **programming mode** of the central unit before proceeding with the next step.
7. Disconnect the **POWER** and **SIGNAL** connections from the **programming track**.
8. Connect the **POWER** and **SIGNAL** connectors to the **main track** of your control panel. Now the **green LED** next to the POWER connector and the **red LED** both light up again. The **red LED** indicates that the DR4024 is still in programming mode.
9. Now press the programming buttons on the DR4024. The **red LED** goes out and the programming mode is terminated.
10. **Attention!** Now disconnect the **POWER** and **SIGNAL** connections from the **main track** of the control panel. This is absolutely necessary to successfully complete the RESET. After approx. 30 seconds the desired connection can be restored.

The DR4024 is now reset to factory settings. The POM address was reset to 9999 again and the DR4024 has the magnetic article address 1 again. By switching the magnetic article address 1 it can be checked whether the RESET was successful.

4.0 Troubleshooting

4.1 The **red LED** goes out again although the programming button has not been pressed again.

Some central units have the problem that after pressing the programming button of the DR4024, the red LED goes out again shortly after the programming mode has been activated and the DR4024 automatically terminates the programming mode.

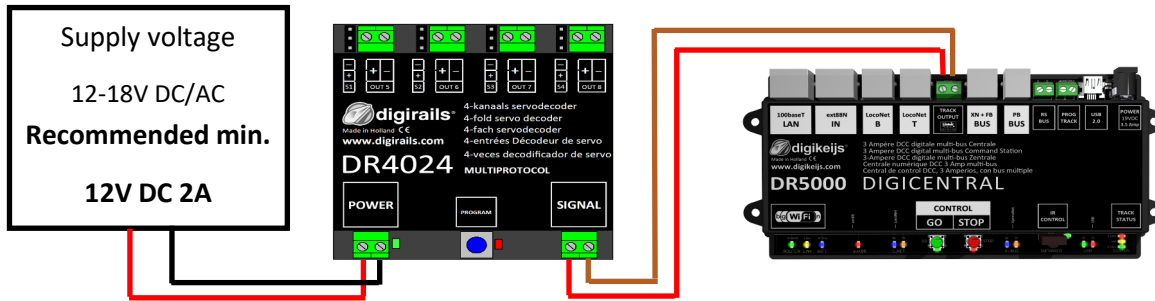
This happens if the locomotive with the address 9999 has not yet been activated in the central station. This can be easily avoided by always "activating" "the locomotive" with the address 9999 before pressing the programming button of the DR4024.

In order to avoid the red LED extinguishing, please observe the following procedure for POM programming:

1. Define a locomotive with **locomotive address 9999** (DCC, 128 speed steps) in the central/multi mouse or app.
2. Activate the **"locomotive" with address 9999** in the control panel by switching the lighting on and off again (F0) .
3. Press the programming button on the DR4024 only now. The **red LED** will now glow continuously to indicate that the DR4024 is in the programming mode.
4. Now start to change the desired CV's via POM (**locomotive address 9999**).
5. To exit the programming mode of the DR4024, the programming button must be pressed again.
The **red LED** goes out and indicates that the programming mode has been terminated.

5.0 Connection examples

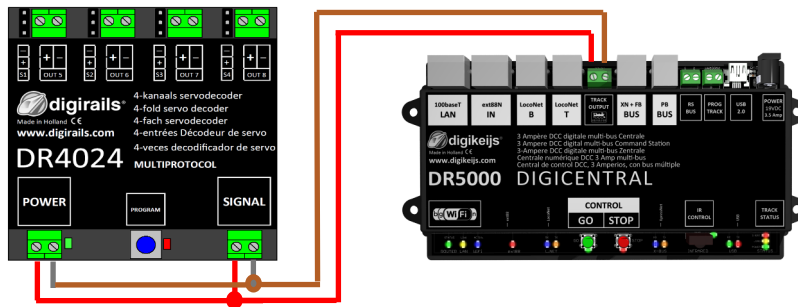
5.1 Connection options Power and signal Connection



Signal Connection to **main track**

Power Connection to an **external power supply**

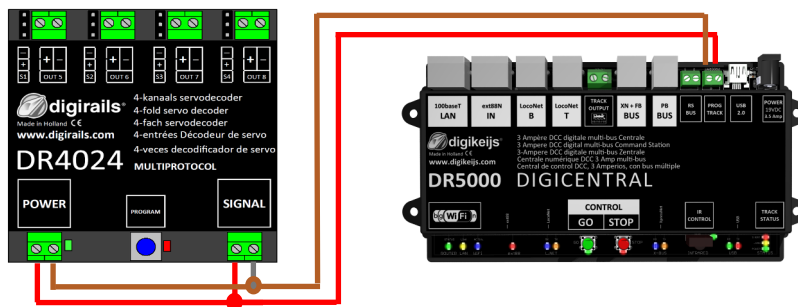
Recommended for **normal operation** and for the **POM programming**



Signal Connection to **main track**

Power Connection to **main track**

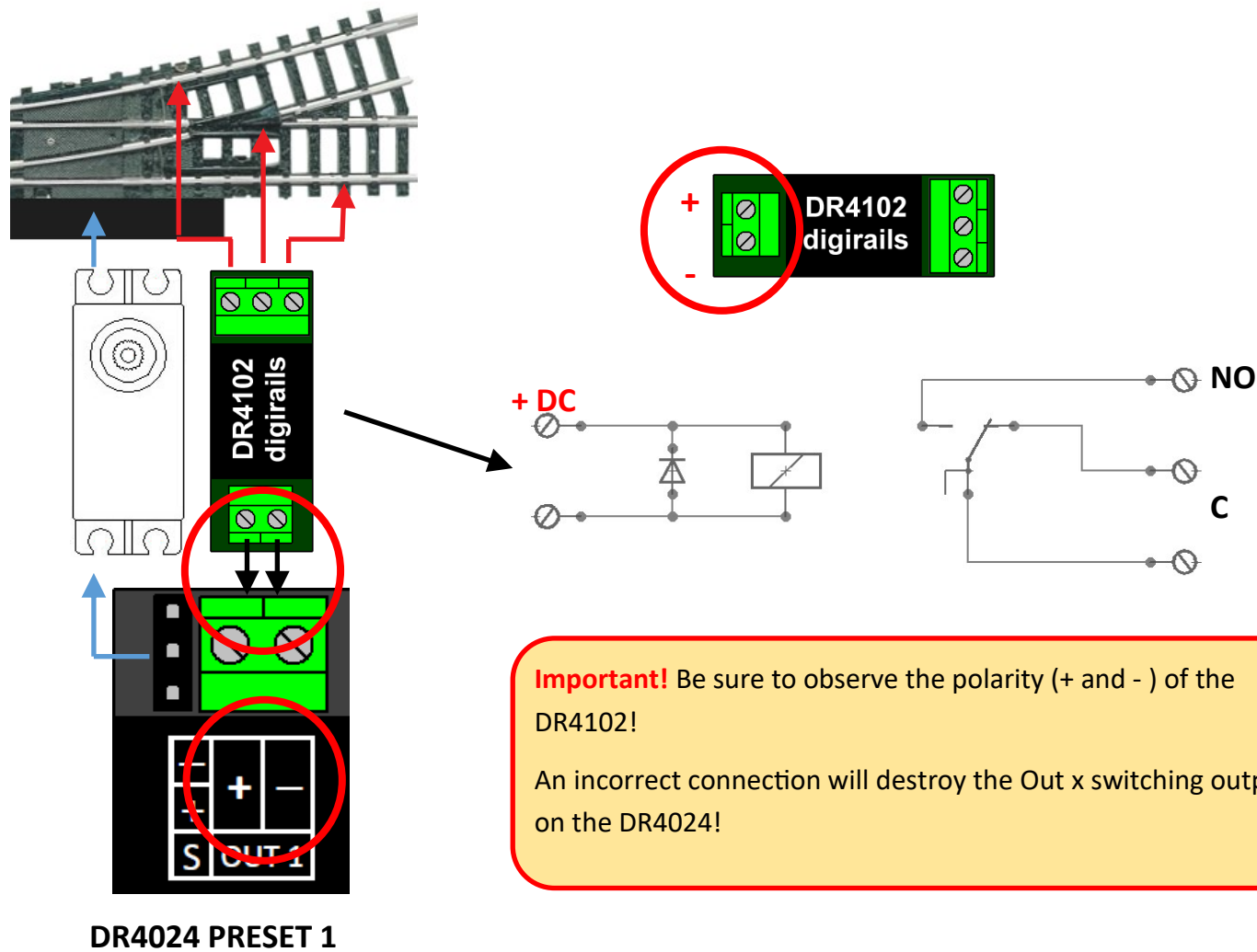
Alternative to connecting an external power supply.
Suitable for **normal operation** and for the **POM programming**



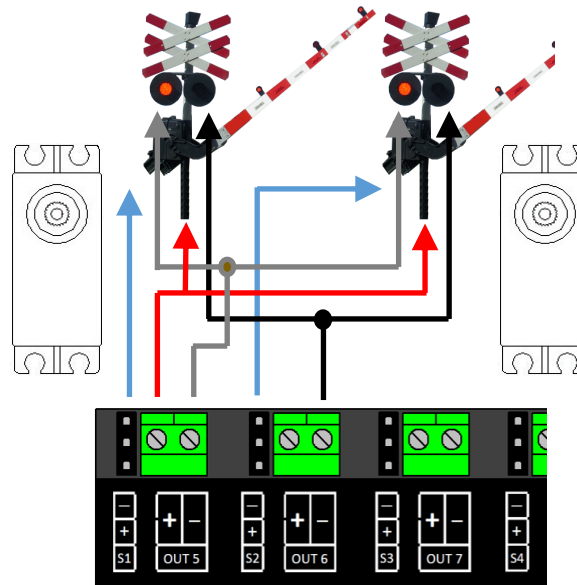
Signal Connection to **programming track**

Power Connection to **programming track**

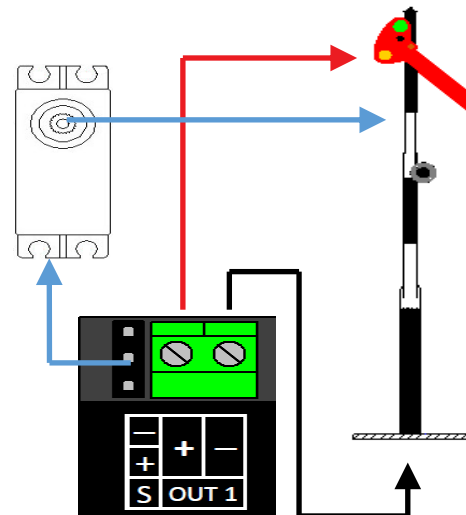
5.2 Connection DR4102 relay switch polarization



5.3 Railway crossing with barrier and interchangeable indicators



5.4 Wing signal NL



6.0 Servo installation and connection

- Servo connection cables should always be kept as short as possible to avoid interference.
- With long servo cables, always use twisted connection cables with a cross-section of at least 0.35 mm² to minimize interference.
- Always lay the servo cables separately from other cables to avoid interference.
- Always make sure that the voltage source used can provide sufficient current (A).
A switching power supply is better suited for this purpose than an "old" AC transformer.
- Never twist the servo by hand. This can cause damage to the gearbox of the servo.
- The servo lever should always be mounted in the middle position of the servo. Observe point 3.2 of this manual.
- Always ensure that the servo has sufficient freedom of movement during installation to avoid damage.
- When screwing on the servo lever, make sure that the servo is not twisted to avoid damage to the gear unit.
- When adjusting the servo positions, ensure that the actuating parts have sufficient freedom of movement to avoid damage.

7.0 CV Table

CV	CV Definition	Range	Value										
7	<u>Decoder Version</u>		13										
8	<u>Manufacturer ID</u> Value '8' resets the decoder to factory settings.		42										
17	<u>Long address</u> high byte	192-255	231										
18	<u>Long address</u> low byte	0-255	15										
47	Presets / Presets 0-3 <i>(this CV can only be written a read out is not possible!)</i>	0 – 3	0										
<p>The DR4024 servo decoder has four presets to make programming easier. Each preset configures the DR4020 so that you do not have to change CVs manually. For detailed information on these presets, see page 24.</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Funktion</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Default setting 0 > 4 servos (1-4) and 4 separate switching outputs (5-8) (8 addresses)</td> </tr> <tr> <td>1</td> <td>Default setting 1 > 4 servos (1-4) with linked switching outputs (1-4) (4 addresses)</td> </tr> <tr> <td>2</td> <td>Default setting 2 > 4 servos with mass simulation (1-4) and 4 separate switching outputs (5-8) (8 addresses)</td> </tr> <tr> <td>3</td> <td>Default setting 3 > Level crossing with flasher, 2 barriers and mass simulation (2 addresses)</td> </tr> </tbody> </table>				Value	Funktion	0	Default setting 0 > 4 servos (1-4) and 4 separate switching outputs (5-8) (8 addresses)	1	Default setting 1 > 4 servos (1-4) with linked switching outputs (1-4) (4 addresses)	2	Default setting 2 > 4 servos with mass simulation (1-4) and 4 separate switching outputs (5-8) (8 addresses)	3	Default setting 3 > Level crossing with flasher, 2 barriers and mass simulation (2 addresses)
Value	Funktion												
0	Default setting 0 > 4 servos (1-4) and 4 separate switching outputs (5-8) (8 addresses)												
1	Default setting 1 > 4 servos (1-4) with linked switching outputs (1-4) (4 addresses)												
2	Default setting 2 > 4 servos with mass simulation (1-4) and 4 separate switching outputs (5-8) (8 addresses)												
3	Default setting 3 > Level crossing with flasher, 2 barriers and mass simulation (2 addresses)												
112	Flashing frequency for the switching outputs with bit 7 active in CV117 - CV120. Value 20 is 90x per minute.	0-255	20										
113	CVs 113-116 have the same function as servos 1-4.	0-255	2										
-													
116	<table border="1"> <thead> <tr> <th>Bit</th> <th>Funktion</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>0-3</td> <td>Sets the servo step size. Value 15 is the fastest; Value 0 is the slowest.</td> <td>2 0-15</td> </tr> <tr> <td>4-7</td> <td>Sets the servo step speed. Value 15 is the smallest and Value 0 is the largest. 0 stands for 50 steps per second. 1 = 25/s, 2 = 12/s, 3 = 5/s, 4 = 4/s. etc... Maximum Value 15 = 1 step / second. The last setting in combination with bits 0-3 switched to 0 means that the servo switches between the two extreme positions in 126 seconds!</td> <td>0 (0-15) *16</td> </tr> </tbody> </table>	Bit	Funktion	Value	0-3	Sets the servo step size. Value 15 is the fastest; Value 0 is the slowest.	2 0-15	4-7	Sets the servo step speed. Value 15 is the smallest and Value 0 is the largest. 0 stands for 50 steps per second. 1 = 25/s, 2 = 12/s, 3 = 5/s, 4 = 4/s. etc... Maximum Value 15 = 1 step / second. The last setting in combination with bits 0-3 switched to 0 means that the servo switches between the two extreme positions in 126 seconds!	0 (0-15) *16			
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CV	CV Definition	Range	Value
117	<p>CVs 117-120 each have the same function as switching outputs 1-4. Switching output 1 (OUT 5)</p> <p>Bits 0-1 sets the switching point for the 'on' position of the assigned switching output. Bits 4-5 sets the switching point for the 'off' position of the assigned switching output.</p> <p>Value 0 switches servo independently Value 1 switches when the assigned servo reaches position A Value 2 switches when the assigned servo reaches position B Value 3 switches when the assigned servo reaches the center between points A and B.</p> <p>Bit 7 =1 Output 1 flashes at the frequency specified in CV 112.</p>	0-179 0-51 128	0
118	Switching output 2 (OUT 6) For settings, see CV117	0-179	0
119	Switching output 3 (OUT 7) For settings, see CV 117	0-179	0
120	Switching output 4 (OUT 7) For settings, see CV 117	0-179	0
121	<p>Position A for servo 1</p> <p>CVs 121-136 contain the different end positions of the servos. Each servo has 4 end positions: A, B, C, D. These end positions can be selected using function mapping (see page 19).</p>	0-255	224
122	Position C for servo 1	0-255	176
123	Position B for servo 1	0-255	32
124	Position D for servo 1	0-255	80

CV	CV Definition	Range	Value
125	Position A for Servo 2	0-255	224
126	Position C for Servo 2	0-255	176
127	Position B for Servo 2	0-255	32
128	Position D for Servo 2	0-255	80
129	Position A for Servo 3	0-255	224
130	Position C for Servo 3	0-255	176
131	Position B for Servo 3	0-255	32
132	Position D for Servo 3	0-255	80
133	Position A for Servo 4	0-255	224
134	Position C for Servo 4	0-255	176
135	Position B for Servo 4	0-255	32
136	Position D for Servo 4	0-255	80
137	<p>CVs 137-140 contain Mass Simulation Value.</p> <p>If the value is not equal to 0, then the servo subtracts or adds this value alternately at the end position, whereby the value is also reduced by 1 each time until the value is equal to 0.</p> <p>This has the consequence that the servo oscillates less back and forth when it is at the end position. For this to work, the end position + BounceValue must be less than 255 and the end position - BounceValue more than 0.</p>	0-63	0
138	Mass Simulation Value for Servo 2 (see CV137)	0-63	0
139	Mass Simulation Value for Servo 3 (see CV137)	0-63	0
140	Mass Simulation Value for Servo 4 (see CV137)	0-63	0

7.1 Funktionen Mapping

The following table shows you how to connect the different outputs of the DR4024 module (1-8) to the turnout control panel of your control panel verknüpfen werden. This can be useful if you want to switch several outputs simultaneously via one key. If you want to switch several outputs in a group with one function key, then add the values.

Example 1 (grey): Button 2 switches servo 1 position A ON

Program Value 1 with CV147

Example 2 (black): Button 3 switches servo 2 position C ON

Program Value 4 with CV154

Combined example: Button 6 switches servo 3 position A + servo 4 position B + OUTPUT 8 ON
ProgramValuee 16 + 128 = 144 for CV171 and Value 8 for CV173

	Status	CV (A+B)	CV (C+D)	Output	SERVO POSITIONEN A, B, C, D								
					S1 (A)	S1 (B)	S2 (A)	S2 (B)	S3 (A)	S3 (B)	S4 (A)	S4 (B)	
					A	B	A	B	A	B	A	B	
					C	D	C	D	C	D	C	D	
					OUT 5	OUT 6	OUT 7	OUT 8					
Button 1	ON	141	142	143	1	2	4	8	16	32	64	128	
	OFF	144	145	146	1	2	4	8	16	32	64	128	
Button 2	ON	147	148	149	1	2	4	8	16	32	64	128	
	OFF	150	151	152	1	2	4	8	16	32	64	128	
Button 3	ON	153	154	155	1	2	4	8	16	32	64	128	
	OFF	156	157	158	1	2	4	8	16	32	64	128	
Button 4	ON	159	160	161	1	2	4	8	16	32	64	128	
	OFF	162	163	164	1	2	4	8	16	23	64	128	
Button 5	ON	165	166	167	1	2	4	8	16	32	64	128	
	OFF	168	169	170	1	2	4	8	16	32	64	128	
Button 6	ON	171	172	173	1	2	4	8	16	32	64	128	
	OFF	174	175	176	1	2	4	8	16	32	64	128	
Button 7	ON	177	178	179	1	2	4	8	16	32	64	128	
	OFF	180	181	182	1	2	4	8	16	32	64	128	
Button 8	ON	183	184	185	1	2	4	8	16	32	64	128	
	OFF	186	187	188	1	2	4	8	16	32	64	128	

* The GREEN numbers are the default settings for SERVO 1-4.

* The RED numbers are the default settings for OUTPUT 5-8.

7.2 Presets (Preset 1-4)

There are four preset CV sets to make programming easier.

These presets are called with the CV47. The setting in CV47 automatically sets some default effects and settings.

It is not possible to read the CV 47.

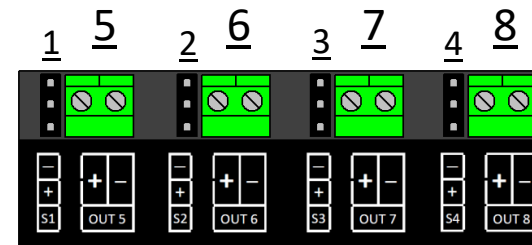
Default 0 (Preset 0) (default)

4 servos (1-4) and 4 separate switching outputs (5-8)

Default setting 0 automatically gives the module 8 addresses.

Addr. 1-4 are used for the 4 servo outputs.

Addr. 5-8 are assigned for the 4 additional switching outputs OUT5 - OUT8.



Preset 1 (Preset 1)

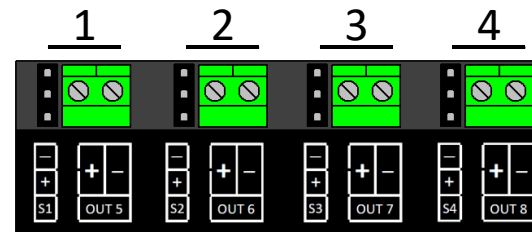
4 servos (1-4) linked to the switching outputs (1-4)

Default setting 1 automatically gives the module 4 addresses (1-4).

The additional switching outputs are linked to the servo outputs.

The additional switching outputs are switched as soon as the respective servo reaches the middle position.

Use this preset if you want to polarize a crossover via a relay DR4102.



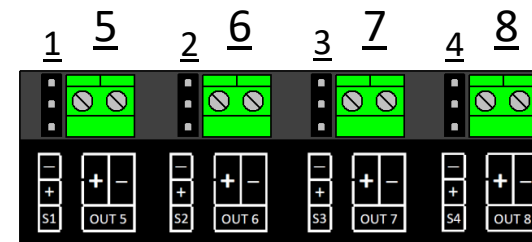
Preset 2 (Preset 2)

4 servos with mass simulation (1-4) and 4 separate switching outputs (5-8)

Default setting 2 automatically gives the module 8 outputs.

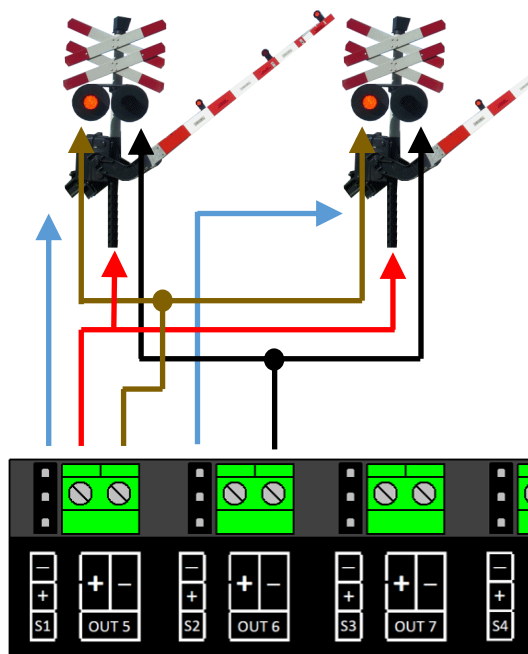
Addr. 1-4 are assigned for the 4 servo outputs S1-S4, whereby the mass simulation is automatically activated for each servo output.

Addr. 5-8 are assigned for the 4 additional switching **outputs OUT5 - OUT8**.



Default setting 3 (Preset 3)

Level crossing with changeable indicators,
two barriers and mass simulation



Let your imagination run wild by using the presets as a starting point on which to build other effects. For example, you can use preset 2 as the basis for a signal that influences the behavior of the locomotive: Adjust the function mapping so that the outputs switch together with the servos and set the output configuration so that it switches when the green mode is reached.

Important: The servo speed and end positions are not influenced by the presets!