

DR5000

CV Programming Instructions

With new functions as of firmware 1.5.4

(2019-05-09)



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1.0 General Information

1 Index

1.0	General information	2
1.1	Index	2
1.2	Warranty and warranty conditions	3
1.3	Legal information	3
2	CV Programming	
2.0	Overview CV programming window	4
2.1	CV programming via the main track (POM)	5
2.2	CV programming via the programming track	6
2.3	Programming via the main track (POM) if Railcom® is available via the DR5088RC.	7
2.4	Reading several CVs and saving them in one CVS file save (programming track)	8
2.5	Multiple CVs from a CSV file to a decoder write (programming track)	9
2.6	Structure of a CSV file	10
2.3	CV table (selection) locomotive decoder	11

1.2 Warranty and warranty conditions

All our products come with a 24-month manufacturer's warranty. Please read these operating instructions carefully.

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

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

1.3 Legal information

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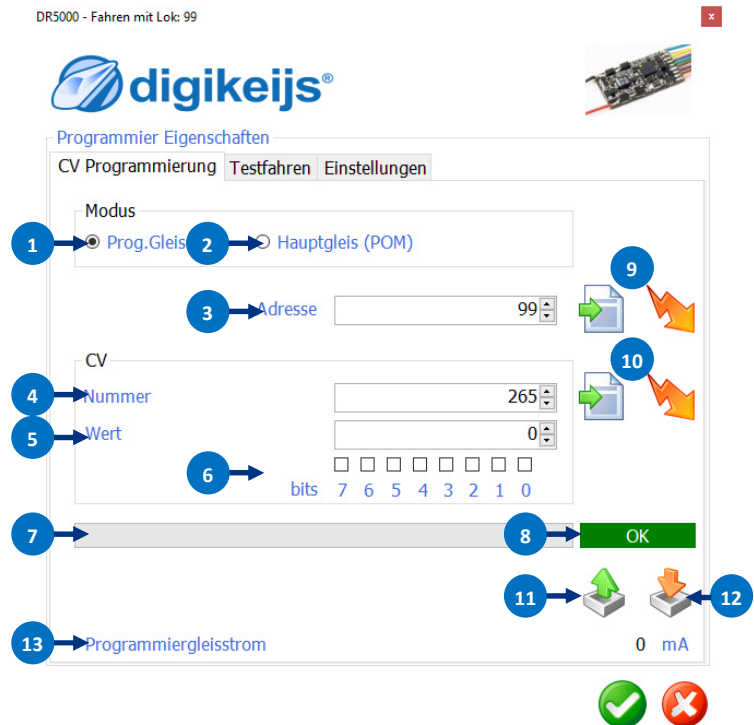
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2.0 Overview CV Programming Window

Short overview of the functions available in the programming window of the DR5000 tool.

1. Select programming via the **programming track**.
2. Select programming via the **main track (POM)**.
3. **Locomotive decoder address**, (With the DR4018/DR4024 always 9999, never the turnout address!)
4. **CV number**
5. **Numerical value** of the CV that was read or written.
6. **Bits** to be written in the selected CV.
7. **Progress indicator** of the read/write process.
8. **Status** of the readout or programming process.

OK	Read-out, write operation OK.
Fail	Readout, write operation failed.
TimeOut	no decoder detected.
No Read	no read result.
9. **Read / write** locomotive decoder address
10. **CV Read / write** value
11. Read decoder and save the values in a **CSV file** (only available with firmware 1.5.4 and higher)
With this function several CVs, which are stored in a CSV file, can be read out automatically and saved in the selected file. See point 2.4
12. Write decoder with values from a **CSV file**. (only available from firmware 1.5.4)
With this function several CVs from a CSV file can be automatically written into the selected decoder. See point 2.5
13. **Programming track current**

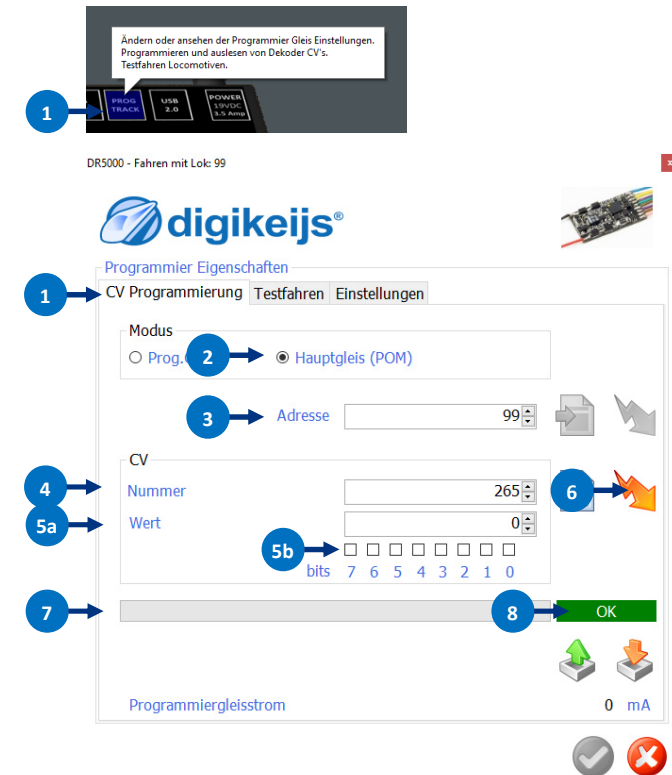


2.1 CV programming via the main track (POM)

Description of the programming procedure if **no** Railcom® is available via the DR5088RC.

Programming via the main track is the easiest way to change a CV in the desired decoder (locomotive). However, the decoder address (locomotive address) must be known.

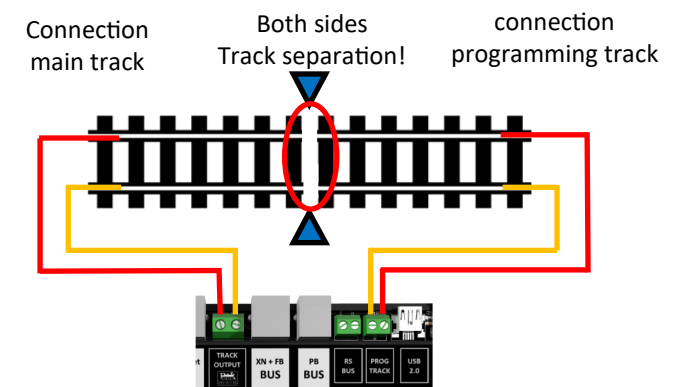
1. Call up the programming menu under **Prog.Track** on the DR5000.
2. Select **main track (POM)**.
3. **Enter the address** of the locomotive decoder to be programmed.
(With DR4018/DR4024 always 9999, never the turnout address!)
4. Enter the **CV number** to be changed.
5. **CV Value** to be written.
Two input options:
(a) Enter the desired new CV setting numerically.
(b) Or by ticking the box. This will activate the desired bit to be written to the selected CV.
6. Write CV by pressing the button ("Write to CV") into the decoder.
7. This bar indicates the progress of the read or write process
8. **Status** of the readout or programming process.
OK Read-out, write operation OK.
Fail Readout, write operation failed.
TimeOut no decoder detected.
No Read no read result.



2.2 CV Programming via the programming track

Description of programming via the DR5000 programming track. All CV's can be easily modified by programming on the DR5000 programming track without the decoder address (locomotive address) having to be known. The programming track can be used normally but there must be a rail separation on both sides to the rest of the system.

1. Call up the programming menu under **Prog.Track** on the DR5000.
2. Select **Prog.Track**
3. Enter the **address** that the locomotive decoder is to receive.
(The current decoder address can also be read with button 4a.)
To program the DR4018/DR4024, enter 9999 here if necessary, never the turnout address!
4. Read / write address
 - (a) Read the current address from the locomotive decoder.
 - (b) Write the address into the locomotive decoder.
 If a "long address" is entered here, the CV 17,18 and 29 are automatically described correctly. Then no additional settings are necessary in this CV.
5. Enter the **CV number** to be changed.
6. **CV Value** to be written.
Two input options:
 - (a) Enter the desired new CV setting numerically.
 - (b) Or by ticking the box. This will activate the desired bit to be written to the selected CV.
7. **CV value read / write**
 - (a) Read CV by pressing the button ("Read CV value") from the decoder.
 - (b) Write CV by pressing the button ("Write to CV") into the decoder.
8. This bar indicates the progress of the read or write process.
9. **Status** of the readout or programming process.



OK	Read-out, write operation OK.
Fail	Readout, write operation failed.
TimeOut	no decoder detected.
No Read	no read result.

2.3 CV programming via the main track if Railcom® is available via DR5088RC.

Description of the programming procedure if Railcom® is available via the DR5088RC.

Programming via the main track and Railcom® is one way to change or read a CV in the desired locomotive decoder. However, the decoder address (locomotive address) must be known and of course the locomotive decoder must support this possibility.

1. Call up the programming menu under **Prog.Track** on the DR5000.
2. Select **main track (POM)**.
3. **Enter the address** of the locomotive decoder to be programmed.
The DR4018/DR4024 cannot be programmed via Railcom®.
4. Enter the **CV number** to be changed.
5. **CV Value** to be written.

Two input options:

(a) Enter the desired new CV setting numerically.

(b) Or by putting the hook. This activates the desired bit to be written to the selected CV.

6. **CV value read / write**

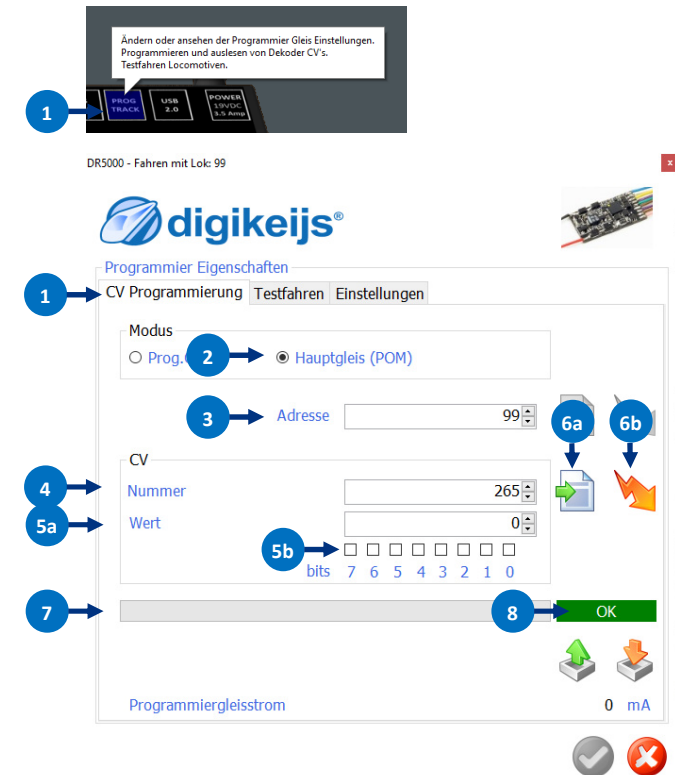
(a) Read CV by pressing the button ("Read CV value") from the decoder.

(b) Write CV by pressing the button ("Write to CV") into the decoder.

7. This bar indicates the progress of the read or write process.

8. **Status** of the readout or programming process.

- OK** Read-out, write operation OK.
- Fail** Readout, write operation failed.
- TimeOut** no decoder detected.
- No Read** no read result.



2.4 Read several CVs from one decoder and save them in one CVS file (programming track)

Description of the programming procedure if no Railcom® is available via the DR5088RC.

With this function several CVs can be read out automatically one after the other. The read values are automatically written to the selected CSV file and saved. Please note that a separate CSV file must be created for each decoder to be read!

1. Call up the programming menu under **Prog.Track** on the DR5000.

2. Select **Prog.Track**

3. This bar indicates the progress of the read or write process.

4. **Status** of the readout or programming process.

OK Read-out, write operation OK.

Fail Readout, write operation failed.

TimeOut no decoder detected.

No Read no read result.

5. **Read multiple CVs** and save them to the selected CSV file.

The button is highlighted in orange after pressing to indicate that a readout process has been started.

If the read operation is not carried out correctly, the read operation can be aborted by pressing the button again.

6. If the **button** has been pressed, the dialog for selecting the template with which the readout is to take place opens. As soon as the desired file has been selected and confirmed by "**Open**", the reading process starts immediately.

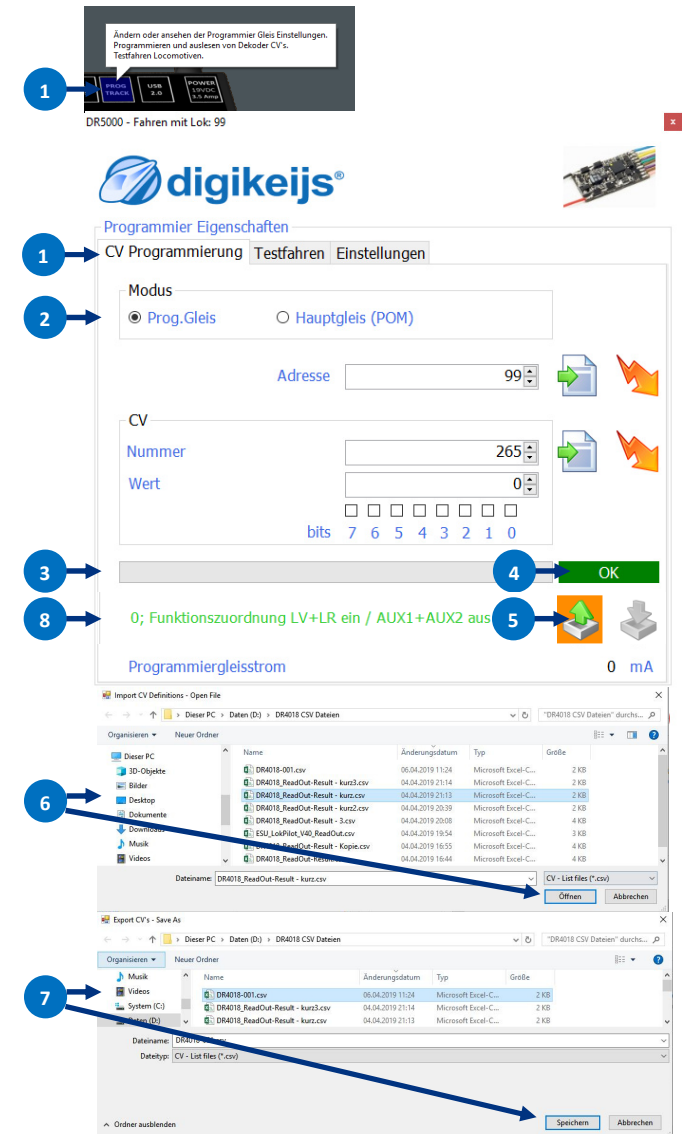
7. When the reading process is **finished**, the dialog for selecting the file in which the read values are to be **stored** opens. If the file has been selected or a new file name has been assigned and confirmed with "**Save**", the reading process is finished.

8. **Information** which CV is currently being read.

ATTENTION: If a read error occurs when reading a CV value, the decimal value "-1" is always written to the output file (CVS file).

! Notice !

The readout can also be done via the main track (POM) and Railcom® (DR5088RC). In step 2, the main track (POM) and the known locomotive address must be entered in the "Address" field. The locomotive decoder must also support Railcom®.



2.5 Write multiple CVs from a CSV file to a decoder (programming track)

Description of the write operation.

With this function several CVs can be written into one decoder automatically and one after the other. The values are automatically read from the selected CSV file and written to the decoder.

1. Call up the programming menu under **Prog.Track** on the DR5000.

2. Select **Prog.Track**

3. This bar indicates the progress of the read or write process.

4. **Status** of the readout or programming process.

OK Read-out, write operation OK.

Fail Readout, write operation failed.

TimeOut no decoder detected.

No Read no read result.

5. **Write multiple CVs** from a selected **CSV file** to a decoder.

The write operation is started immediately after the file with the stored values has been selected.

The button is highlighted in orange to indicate that a write operation is in progress.

If the writing process is not carried out correctly, the process can be interrupted by pressing the button again.

6. **Information** which CV is currently being written.



! Hinweis !

Das schreiben kann auch über das Hauptgleis (POM) erfolgen. Dazu muss bei Schritt 2 das Hauptgleis (POM) und im Feld „Adresse“ die bekannte Lokadresse eingegeben werden.

2.6 Structure of an individually created CSV file

With the help of an individually created CSV file, several CVs of a decoder can be read out and the determined values saved.

In addition it is possible with a once created CSV file to provide several decoders simply with the same settings, without having to write all CVs individually. Please note that only generally accessible CVs can be read or written. Special functions such as sound programming are not possible.

With any simple **text editor** you can create a so-called CSV file.

Each line then corresponds to a CV write or read command and has the following format:

CV number ; Value ; Description

Specify the CV number and value as decimal numbers. The description is any text.

Separate each entry with a semicolon. Spaces are allowed.

Example for activating preset 2 and changing the fading in a DR4018 decoder:

47 ; 2 ; DR4018 Preset 2 Einstellung

111 ; 2 ; Änderung der Fade-Geschwindigkeit

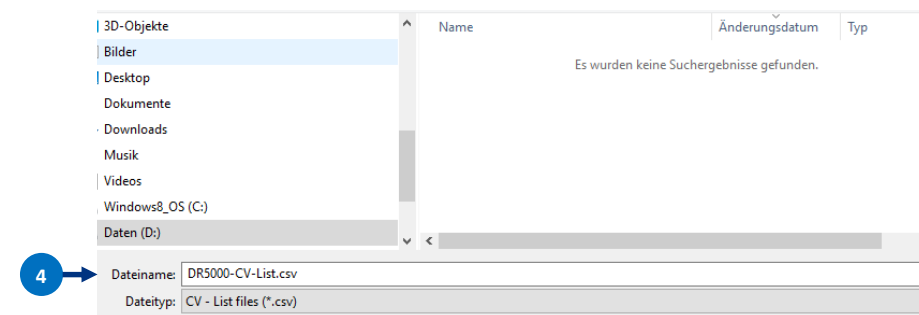
Save the file with the extension *.csv in the editor.

CSV files can also be created using EXCEL®:

1. Column "A" **CV number** to be read or written.
(Only numeric input allowed).
2. Column "B" **Value** of the CV to be written.
3. (Only numeric input allowed).
4. Column "C" **individual description**.
5. (Here you can e.g. enter a description of the CV).
6. Example how the name of a CSV file can look like.
Save the file in EXCEL® with the extension *.csv as well.

ATTENTION: If a read error occurs when reading a CV value, the decimal value "-1" into the output file (CVS file).

	1	2	3
	A	B	C
1	1	3	Lok-Adresse
2	2	5	Startspannung
3	3	5	Beschleunigung
4	4	5	Bremsrate
5	5	256	Maximal Spannung
6	6	48	Mittlere Spannung
7	7	99	Versionsnummer
8	8	99	Herstellerkennung
9	17	0	lange Adresse
10	18	0	lange Adresse
11	29	14	Konfiguration



2.7 CV List (selection) locomotive decoder

This table shows only a selection of certain CV's, which should normally be present with all decoders. Since each manufacturer goes its own way, the complete CV's must be taken from the manual of the decoder used.

CV	values	significance	Explanation			
1	0 - 127	locomotive address	Locomotive address (short address max. 127)			
2	0 - 255	starting voltage	Voltage which is output to the motor at speed stage 1.			
3	0 - 255	acceleration	Acceleration time			
4	0 - 255	deceleration rate	deceleration time			
5	0 - 255	Maximum voltage	Maximum speed (voltage at highest speed level which is output to the motor)			
6	0 - 255	Mean voltage	Medium speed (voltage at medium speed level output to the motor)			
7	1 - 255	version number	Version number of the decoder (read only)			
8	0 - 255	manufacturer	Setting a certain value resets the decoder.			
17,18	1 - 10239	long address	Values for the long address Assignment			
29	0 - 255	Konfiguration	Bit	(values)	function	settings
			1	(1)	driving direction	Bit=0: Direction of travel normal Bit=1: Direction of travel inverted.
			2	(2)	Number of speed steps	Bit=0: 14 speed steps
			3	(4)	Analog mode	
			4	(8)	Characteristic curve	Bit=0: Speed according to CV2, CV5 and CV6
			5	(16)	Short/long addresses	Bit=0: short address in CV1