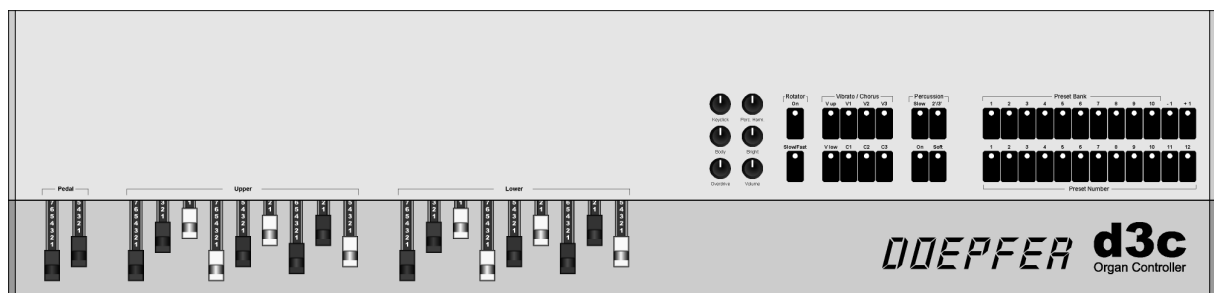


# DOEPFER

## Organ Controller

# d3c

## User's Guide



## Operating and Safety Instructions

Please follow the given instructions for use of the instrument because this will guarantee correct instrument operation. Due to the fact that these instructions touch on Product Liability, it is absolutely imperative that they be read carefully. Any claim for defect will be rejected if one or more of the items was observed. Disregard of the instructions can endanger warranty.

- The instrument may only be used for the purpose described in this operating manual. Due to safety reasons, the instrument must never be used for other purposes not described in this manual. If you are not sure about the intended purpose of the instrument please contact an expert.
- The instrument has to be shipped only in the original packaging. Any instruments shipped to us for return, exchange, warranty repair, update or examination must be in their original packaging! Any other deliveries will be rejected. Therefore, you should keep the original packaging and the technical documentation.
- The instrument may only be operated with the voltage written on the power input on the rear panel. Before opening the case disconnect the power plug.
- Every modification has to be carried out only at the manufacturer or an authorized service company. Any modification not released by the manufacturer leads to the extinction of the operation permission.
- With the introduction of a third person the warranty will be lost. In case of a destroyed warranty seal, any warranty claim will be rejected.
- The instrument must never be operated outdoors but only in dry, closed rooms. Never use the instrument in a humid or wet environment nor near inflammables.
- No liquids or conducting materials must get into the instrument. If this should happen the instrument must be disconnected from power immediately and be examined, cleaned and eventually be repaired by a qualified person.
- Never subject the instrument to temperatures above +50°C or below -10°C. Before operation the instrument should have a temperature of at least 10°C. Do not place the instrument into direct sun light. Do not install the instrument near heat sources.
- Keep the top side of the instrument free in order to guarantee proper ventilation, otherwise the instrument could be overheated. Never place heavy objects on the instrument.
- All cables connected with the instrument must be checked periodically. If there is any damage the cables must be repaired or replaced by an authorized person.
- Transport the instrument carefully, never let it fall or overturn. Make sure that during transport and in use the instrument has a proper stand and does not fall, slip or turn over because persons could be injured.
- Never use the instrument in the immediate proximity of interfering electronic devices (e.g. monitors, computers) since this could create disturbances within the instrument and corrupt memory data.
- The exchange of electronic parts (e.g. EPROMs for software update) is allowed only if the instrument is disconnected from power supply.
- When using the instrument in Germany, the appropriate VDE standards must be followed. The following standards are of special importance: DIN VDE 0100 (Teil 300/11.85, Teil 410/11.83, Teil 481/10.87), DIN VDE 0532 (Teil 1/03.82), DIN VDE 0550 (Teil 1/12.69), DIN VDE 0551 (05.72), DIN VDE 0551e (06.75), DIN VDE 0700 (Teil 1/02.81, Teil 207/10.82), DIN VDE 0711 (Teil 500/10.89), DIN VDE 0860 (05.89), DIN VDE 0869 (01.85). VDE papers can be obtained from the VDE-Verlag GmbH, Berlin.

## Servicing / Updates

There are no controls, adjustments or other elements inside the case that have to be operated by the user.

In case of an firmware update the case has to be opened to replace the main processor by the new version. This service has to be carried out normally by the representative or dealer where the device has been purchased. The service is offered by the manufacturer (Doepfer, Germany) or an authorized dealer or service company too. Please look at the web site [www.doepfer.com](http://www.doepfer.com) for a list of all authorized companies.

Any firmware update is not free of charge. The costs for material, working time and shipment is charged to the customer.

You may even carry out firmware updates yourself at your own risk. In this case the warranty is lost if a mistake is made during the firmware update.

*Pay attention that cases that are damaged while the device has been opened/closed (e.g. scratched surface, damaged screws) cannot be taken back and the warranty is void.*

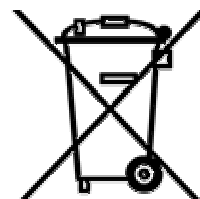
The device d3c uses a rechargeable battery (accumulator) for memory backup of preset data. These electronic parts have a limited lifespan and have to be inspected at least every two years. This should be carried out by qualified personnel only as technical knowledge and soldering experience is necessary. If you are able to carry out the inspection and the possible replacement yourself this is the checking/replacement procedure:

- Disconnect the device completely from mains voltage (i.e. remove the mains cable, turning the device off with a mains switch is not sufficient !)
- Open the case and find out the position of the battery (this is a black or blue cylindrical electronic part with about 15 mm diameter and 15 mm length, the target voltage "3.6V" is printed on the part).
- Optical inspection: check if the battery is still sealed and has no leakage.
- Electrical inspection: measure the battery voltage with a suitable instrument (e.g. digital multimeter in voltage mode). The voltage has to be within 10% of the target voltage (3.6V), i.e. between ~ 3.2V and ~ 3.9V.
- If the optical or electrical inspection indicates any fault the battery has to be replaced by the same type (i.e. 3.6V rechargeable battery / accumulator with the same dimension). Suitable batteries are available in electronic stores or from your local Doepfer representative as spare part.
- If the battery is defective the old one has to be removed (desoldered) and the new one put in (soldered).
- muss der Akkumulator ausgewechselt werden. Der Akkumulator ist im Elektronik-Fachhandel erhältlich oder kann von uns oder einer unserer Vertretungen als Ersatzteil bezogen werden.
- It is not allowed to put the old battery to the normal garbage. Please forward the old battery for recycling to a suitable receiving office.

Technical data are subject to change without notice.

The topical version of this guide is available for download as pdf file on our website [www.doepfer.com](http://www.doepfer.com) (MANUALS section).

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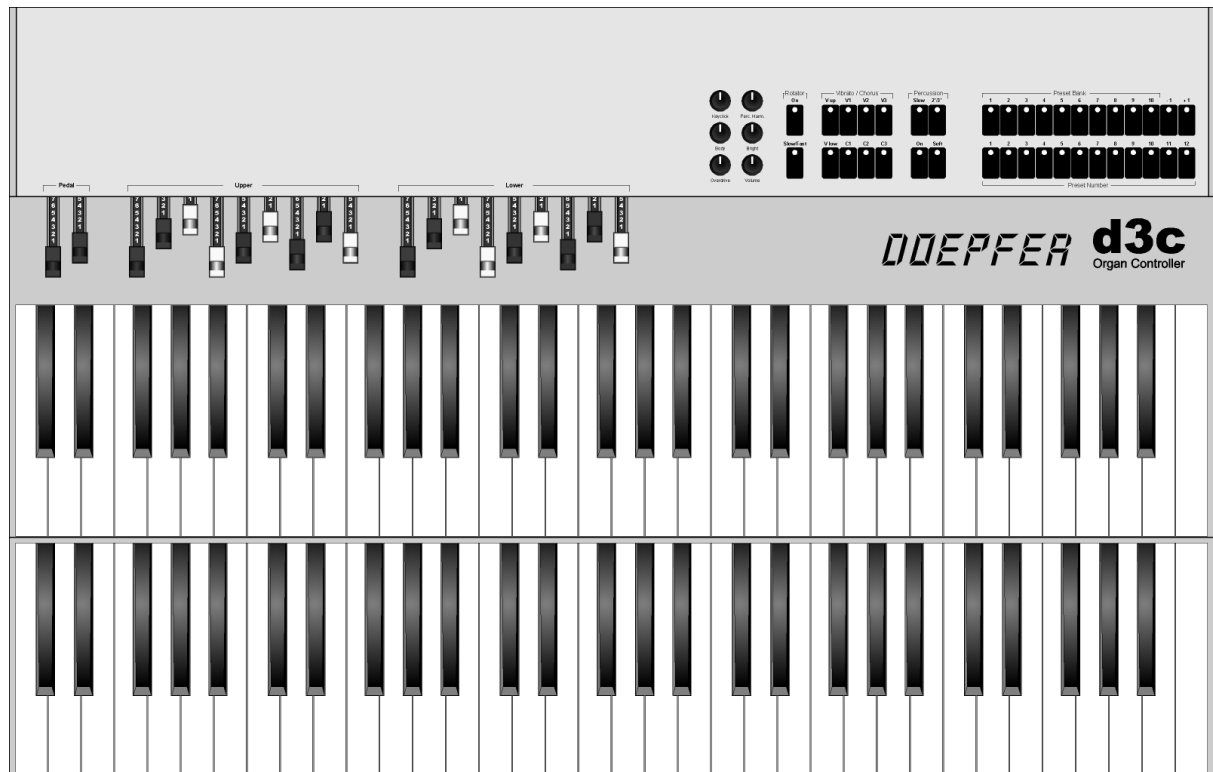


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# Introduction

**d3c** is part of the **modular organ masterkeyboard system d3** that is intended as a control unit for organ emulations like Native Instruments B4 or Emagic evb3. The system has two modules available: the **keyboard unit d3m** and the **drawbar control unit d3c**. Each of the modules can be used alone or in combination with the other modules. The maximum system consists of two keyboards d3m and one control unit d3c (and one bass pedal d3b as soon as it is available). The **bass pedal d3b** is in preparation as the third module of the system.

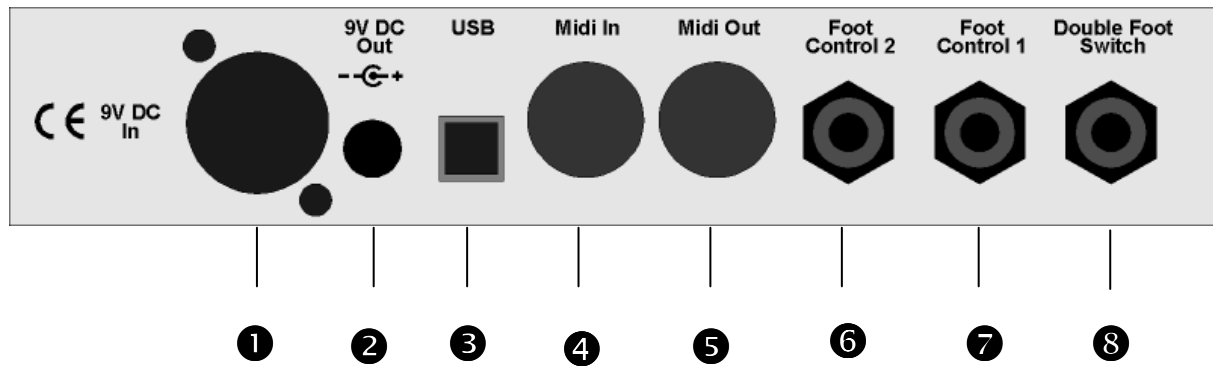


The second part of the modular concept is **drawbar control unit d3c**: This unit contains all elements required to control a typical organ emulation: 9 drawbars for upper manual, 9 drawbars for lower manual, 2 drawbars for bass pedal, 6 rotary controls for the parameters of tube and percussion and a lot of additional buttons for vibrato, chorus, key click, rotary speakers and so on. Even the 10 + 12 program selection buttons of the keyboard unit d3m are available. This is necessary if the (one or two) d3m are mounted with hidden button sections.

The connection between the d3 modules is established via Midi. The control unit d3c is equipped with both **Midi** and **USB** interface. This allows to connect the d3 combination to both worlds Midi and USB (e.g. a laptop that runs B4 or evb3).

The control unit **d3c** can be used as a stand-alone device or in combination with one or two of the **d3m** keyboards (or even with other Midi keyboards). The mechanical connection between the units is made with mounting angles or wooden side plates that are available as accessories. Details about the available accessories and the different mounting versions of d3m and dc3 can be found on our website [www.doepfer.com](http://www.doepfer.com).

## Connections (rear panel)



### Power Supply ① ②

**d3c** does not have a built-in power supply. Instead it uses a plug-in type external power supply (AC adapter). One reason for this feature is electrical safety. Keeping danger voltages (mains) out of the **d3c** increases the electrical safety. Another reason for the external power supply is the fact that line voltages and plug types vary considerably from country to country. Using a plug-in external supply the **d3c** can be used anywhere with a locally purchased power supply, thus keeping the retail price down.

XLR socket ① (labelled 9V DC In) is the power supply input socket. A power supply with XLR plug is connected into this socket. Socket ② (labelled 9V DC Out) is used to pass on the supply voltage to the **d3m** unit(s) provided that one or two **d3m** are used in combination with the **d3c**. Consequently only one power supply is necessary for the complete system (d3c+d3m or d3c+2xd3m).

Internally the sockets ① and ② are connected. If only a **d3c** is used without **d3m** even socket ② can be used to supply the **d3c**. In this case sockets ① remains unused.

Special cables with a low voltage DC plug on each side are used to connect **d3c** → **d3m** or **d3m** → **d3m**. If the **d3c** is ordered together with one or two **d3m** suitable cables are enclosed. Otherwise they have to be ordered later.

In Europe a VDE approved power supply (9V/800mA) is included with the **d3c**. This supply is sufficient for up to one **d3c** and two **d3m** (see below). In other countries a power supply with suitable mains voltage and mains connector has to be purchased separately by the user provided that the dealer resp. representative does not enclose the power supply. The power supply must be able to deliver 7-12 VDC stabilized or unstabilized voltage, as well as a minimum current of 250mA (if only the d3c is used). The correct polarity of the DC voltage connector is: outside ring = GND, inside lead = +7...12V. An external power supply of high quality and safety should be used. If one or two **d3m** have to be supplied with the same power supply additional 250 mA are required for each **d3m** (i.e. 500mA for **d3c** + **d3m**, 750mA for **d3c** + 2x **d3m**).

The **d3c** is switched on by plugging the AC adapter into a wall outlet and connecting it to the appropriate jack of the **d3c**. There is no separate on/off switch. If the polarity of the power supply is incorrect, the **d3c** will not function. However, there is no danger of damage to the circuitry since it is protected by a diode.

## USB ③

This is the USB connector of **d3c**. If you want to run the d3c via the USB interface (instead of Midi) this socket has to be connected to the USB socket of your computer with a suitable cable (A-B type). A suitable cable is included with the **d3c**. But each standard A-B type USB cable will work. The computer system has to be equipped with so-called **generic USB device class drivers for Midi devices**. These are included in the **Windows XP™** or **Mac OS X™** operating system.

Former Windows™ or Mac™ operating systems are not supported. In these cases the Midi interface of **d3c** has to be used.

If the operating system supports the USB device class drivers the computer recognizes the **d3c** connection as soon as the USB cable is connected and the corresponding driver is installed. This is normally indicated by an acoustic computer signal.

After that a new Midi Input and Output labelled **USB audio device** is available and can be used in all programs (e.g. Native Instruments B4).

If an error message appears (e.g. "USB device not recognized" or similar) the required USB driver is probably not available or not installed on the computer. It is difficult to find out the reason why it does not work as it depends upon the hardware and software (especially the operating system and the installed drivers) of the computer.

But we will try to give some hints in this manual and on our website provided that we hear about such problems and their solutions.

Using the USB connection has both advantages and disadvantages compared to the Midi connection. Please read the corresponding notes in this manual and on our website.

## Midi In ④ / Midi Out ⑤

This is the Midi output and the Midi Input of **d3c**. There are different possibilities how to use these sockets:

- Only the **d3c** is used (no d3m or other Midi keyboards):

In this case Midi Out of **d3c** is connected to Midi In of the sound generator that is controlled by **d3c** (e.g. computer with organ emulation, stand-alone organ exander). The Midi In of the **d3c** remains unconnected in this case.

A typical example for this type of connection is a running sequence (e.g. with the VST plugin B4) that is modified while it's running.

- The **d3c** is used in combination with one or more **d3m** (or other Midi keyboards):

The **d3m** and **d3c** are daisy chained via Midi In and Out. Midi Out of the first **d3m** is connected to Midi In of the second **d3m**. Midi Out of the second **d3m** is connected to Midi In of the **d3c**. Midi Out of **d3c** is connected to Midi In of the sound generator that is controlled by the **d3c/d3m** (e.g. computer with organ emulation, stand-alone organ exander). Each **d3m** requires a different Midi channel to be able to distinguish the keyboards (for details please refer to the **d3m** manual).

If a bass pedal **d3b** is used (future module) the Midi Out of the **d3b** is connected to Midi In of the first **d3m** in the chain.

If Native Instruments B4 is used the Midi channels of the **d3m** keyboards have to be set

in this way:

**lower manual:** Midi channel 2

**upper manual:** Midi channel 1

The Midi In of the first **d3m** in this chain remains unconnected or it is connected to the Midi Out of the computer that runs the organ emulation (e.g. B4). This connection is only necessary if a Midi feedback is needed.

**Attention:** This type of connection contains the risk of a Midi feedback loop ! The Midi data sent by the computer are passed on in the **d3m/d3c** chain and consequently appear again at the Midi In of the computer. One has to pay attention that the software in use does not pass on the incoming Midi data again to it's output (no Midi "echo" from Midi In to Midi Out) as this would cause an Midi "avalanche" and probably lead to a crash or freezing of the computer system.

If the connection is made and the settings of the software are correct (i.e. no Midi "echo") the new settings after a preset change are displayed with the LEDs of the **d3c** provided that the software in use outputs this information via Midi Out. This guarantees a perfect tuning of hard and software.

For optimal function of the display feedback the update V1.1.5 of Native Instruments B4 is required. This is available only for Mac OS X and Win XP but not for Mac OS 9 !

**d3c** will work perfect with each version of B4 (Mac OS 9, OS X, Win), but the Mac OS 9 version does not support the feedback function for the LED display of **d3c**!

If the computer in use has several Midi inputs/outputs available we recommend to connect the Midi Out of each **d3m** and **d3c** to a separate Midi input (rather than daisy chaining the devices via Midi In/Out) and to connect one Midi Out of the computer to Midi In of the **d3c** - paying attention to the remarks mentioned above concerning the Midi loop problems.

Remark: The Midi input of **d3c** should be used only for connection to a **d3m** or **d3b** module or another Midi keyboard or bass pedal that transmits only Midi note on/off messages ! The Midi input is not suitable for large amounts of Midi data (e.g. SysEx strings or Midi messages coming from a computer sequencer) but only for small data rates like the messages of a **d3m** or **d3b** module. In case of large amounts of incoming Midi messages data loss or delay may occur.



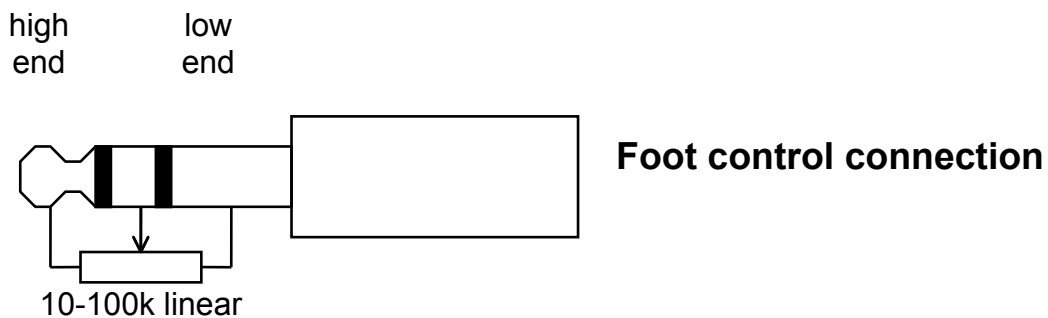
## FOOT CONTROL ⑥ / ⑦

These stereo jack sockets can be used to connect two foot controllers. Do not connect the foot controller unless the **d3c** is switched off. The foot controller functions are fixed to these parameters:

**Foot Control 1 (⑦): Loudness**

**Foot Control 2 (⑥): Expression**

We recommend the usage of the foot controllers FP5. Foot controllers are not included with the d3c and have to be ordered separately if required. You may use even other foot controllers that are connected in this way:



If you do not want to use a foot controller the socket remains unconnected.

## FOOT SWITCH ⑧

This stereophonic jack socket can be used to connect a double foot switch. Do not connect the foot switch unless the **d3c** is switched off. The foot switch functions are fixed to these parameters:

**Left foot switch: Rotator Slow/Fast (togglng)**

**right foot switch: Rotator On/Off (togglng)**

We recommend the usage of the foot switch VFP2. The foot switch is not included with the d3c and has to be ordered separately if required. You may use even another foot switch that uses contacts that are closed at rest (i.e. the contacts open when operated).

If you do not want to use a foot switch the socket remains unconnected.

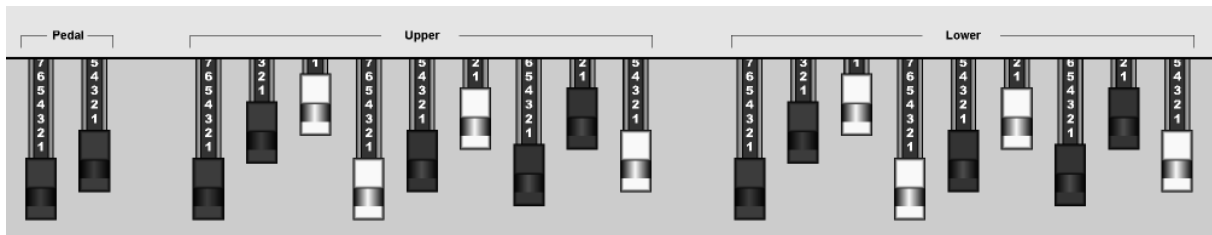
# Operation

The **d3c** is switched on by plugging the AC adapter into a wall outlet and connecting it to the appropriate jack of the **d3c**. There is no separate on/off switch.

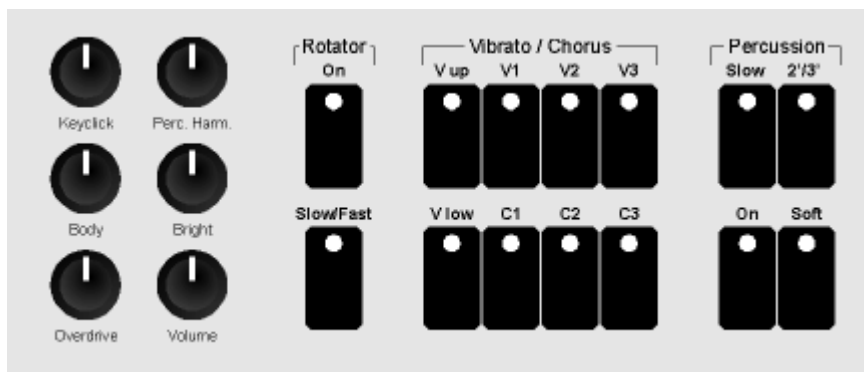
For operation **d3c** has 20 drawbars, 6 rotary controls and 38 buttons available. Each button is equipped with a corresponding LED (light emitting diode).

The functions and inscriptions of the controls correspond to the identical functions of the organ emulations – provided that they are available:

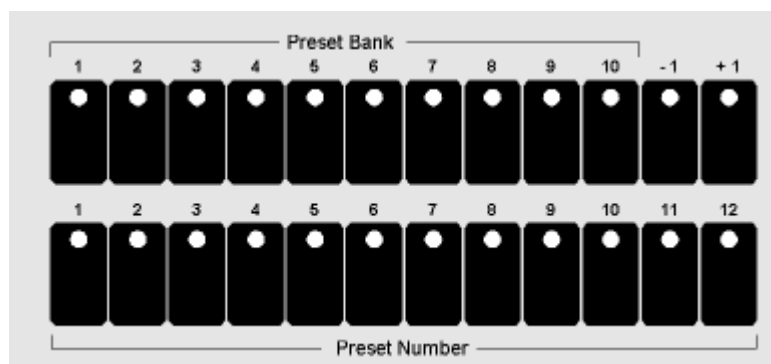
- 2 drawbars for bass pedal : 16, 8
- 9 drawbars for upper manual: 16, 5 <sup>1</sup>/<sub>4</sub>, 8, 4, 2 <sup>2</sup>/<sub>3</sub>, 2, 1 <sup>3</sup>/<sub>5</sub>, 1 <sup>1</sup>/<sub>3</sub>, 1
- 9 drawbars for lower manual: 16, 5 <sup>1</sup>/<sub>4</sub>, 8, 4, 2 <sup>2</sup>/<sub>3</sub>, 2, 1 <sup>3</sup>/<sub>5</sub>, 1 <sup>1</sup>/<sub>3</sub>, 1



- 6 rotary controls for Keyclick, Percussion Harm., Tube Body/Bright, Overdrive, Volume
- 2 buttons for Rotator On/Off, Slow/fast
- 2 buttons for Vibrato/Chorus, On/Off Upper/Lower
- 6 buttons for Vibrato/Chorus Effect
- 4 buttons for Percussion Slow/Fast, Harmonic click, On/Off, Soft/Normal



- 24 buttons for program change (preset).



The buttons are organized in two groups:

- **Preset Number:** 12 buttons 1...12
- **Preset Bank:** 10 buttons 1...10

The 12 number buttons correspond to the reverse colored lowest octave that was available in some previous organs.

In addition up and down buttons are available that increase/decrease the current preset number.

## Operation Modes

After power on all LEDs turn on and go out from left to right. Then all LEDs light up for a short time and go out. After that the current software version is indicated for a short time by using the Bank and Number LEDs. The Bank LED shows the main software version, the Number LED the sub-version (e.g. Bank LED #1 only indicates software V1.0, Bank LED #2 and Number LED #4 on indicate V2.4).

Then the *normal operation mode* is called up. As long as no preset has been defined (either by pressing the Bank/Number buttons or by receiving a Midi program change message via Midi) the LEDs of Bank #1 and Number #1 are flashing. This in the signal that so far no preset has been selected and consequently the states of all parameters are still undefined.

### B4 Mode

This mode is intended for the combination of **d3c** with the **organ emulation B4 of Native Instruments** and is up to now the only available mode. Because of the more versatile functions – compared to the EVB3 and Remote mode – the B4 mode can be used for other applications too, e.g. to control any Midi sound module via the note and program change messages that are available in B4 mode.

*Pay attention that most manufacturers count the Midi program change numbers from 0...127 others from 1...128. In this manual we use the range 0...127 as this is more common. If the device connected to the Midi output of d3m does not respond as expected the different counting ranges may be the reason. In this case you simply have to add "1" to the program change number stated in this manual. Same applies for Midi channels too (i.e. counting from 0 to 15 resp. 1 to 16).*

In the B4 mode the 22 buttons are used to transmit *Midi Program Change Messages*. The *number* buttons generate the program numbers 0...11 (resp. 1...12 in the 1...128 counting system). The *bank* buttons are used to add a fixed value ("offset") to the program number generated by the *number* buttons. The offset value generated by the *bank* buttons is a multiple of 12. The offset is 0 for bank #1, 12 for bank #2, 24 for bank #3 and so on. The table below shows an overview of the available program change numbers for each bank:

| Bank | Program number range for counting system |           |
|------|--|-----------|
|      | 0 – 127                                  | 1 – 128   |
| 1    | 0 – 11                                   | 1 – 12    |
| 2    | 12 – 23                                  | 13 – 24   |
| 3    | 24 – 35                                  | 25 – 36   |
| 4    | 36 – 47                                  | 37 – 48   |
| 5    | 48 – 59                                  | 49 – 60   |
| 6    | 60 – 71                                  | 61 – 72   |
| 7    | 72 – 83                                  | 73 – 84   |
| 8    | 84 – 95                                  | 85 – 96   |
| 9    | 96 – 107                                 | 97 – 108  |
| 10   | 108 – 119                                | 109 – 120 |

The corresponding formula for the resulting program change number generated by the number and bank buttons is this:

$$\text{Number} - 1 + 12 \times (\text{Bank} - 1)$$

Example: Number = 5, Bank = 3

The resulting programm number is  $5 - 1 + 12 \times (3 - 1) = 4 + 24 = 28$ .

The last available program change number is 119 (number #12 in bank #10). The program change numbers 120...127 are not available. In practice the Midi program number generated by the number and bank buttons is of minor importance as one will remind the number and bank buttons used for a certain sound but not the program change number that is assigned to this sound.

The assignment of Midi control change numbers to **d3c** controls (drawbars, buttons) matches with the B3 software. For details please refer to the B4 user's manual.

## **Other Modes**

Other operation modes are in the planning state (e.g. Evb3). They can be downloaded via firmware updates to the **d3c** as soon as they are available. For details please look at our website [www.doepfer.com](http://www.doepfer.com).

# Appendix

## Firmware updates

The latest version of the user's manual and the topic version of the **d3c** firmware are available on our website [www.doepfer.com](http://www.doepfer.com) in the sections MANUALS or DOWNLOAD.

## Troubleshooting

### Symptom:

The B4 software does not follow to the parameter changes of the **d3c** and does not respond to preset changes triggered by the **d3c** (Bank/Number buttons). If one or two **d3m** keyboards are used the B4 does not respond when keys on the **d3m** are pressed down.

### Solution/explanation/reason:

Midi Out of the **d3c** has to be connected to Midi In of the computer.

The Midi Output interface of the B4 has to be routed to the right port and to be turned on.

### Symptom:

No feedback to the **d3c** when a parameter or preset change is triggered in the B4 software

### Solution/explanation/reason:

Check the Midi connections: For this even Midi Out of the computer has to be connected to Midi In of **d3c** (directly or daisy-chained via one or two **d3m**).

The Midi Output interface of the B4 has to be routed to the right port and to be turned on.

For the complete dump during a preset change in the preset menu of the B4 software the function "B4D Controller Dump on Program Change" has to be active (available from version 1.1.5)

### Symptom:

When the preset is changed in the B4 software the **d3c** parameters are updated (LED settings change) but the correct preset number is not displayed (i.e. the settings of the Bank/Number LEDs remain unchanged).

### Solution/explanation/reason:

Unfortunately some versions of the B4 software do not transmit a program change message when a new preset is called up. Consequently the **d3c** does not "know" the new preset number as the corresponding information is not sent by the B4 software. The only solution is to update the B4 software to a new version.

We ask for your understanding that we cannot give assistance to the correct installation of the computer's operating system, the computer's Midi interface and the B4 software as these things depend on the individual hardware and software components of each computer.

## **Power on sequence / USB connection sequence**

The USB connection between the computer and **d3c** must not be established or interrupted while a program is running that uses the USB Midi port (e.g. B4) ! Otherwise the program can block the connection or the Midi ports will not work any longer. In this case it is recommended to reboot the computer.

If the USB connection has been already established earlier (or if the USB Midi port was already in use) and the USB connection has been interrupted and established again it may last several minutes until the USB Midi port is recognized again. In this case it is not allowed to start a Midi program (e.g. B4) as otherwise the Midi port cannot be opened again. Even in this case it is recommended to reboot the computer.

We have to point out that is not a problem of the **d3c** but of the operation system of the computer and the USB drivers.

# DOEPFER MUSIKELEKTRONIK

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