

# BEHRINGER B-CONTROL

## Programming Guide



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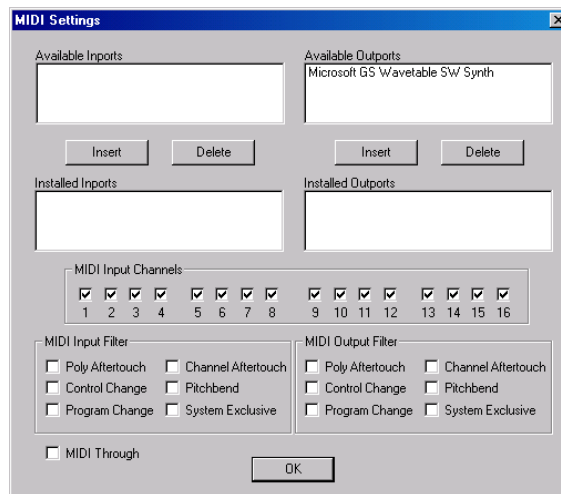
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# Introduction

This programming guide will familiarize you with the programming of your B-CONTROL BCR2000 or BCF2000. You will first learn how to select operating modes on your B-CONTROL and work with presets, then you'll learn how to work with the EDIT and LEARN programming modes, and will also learn more about programming MMC commands. After reading this guide, you will be able to use your B-CONTROL for controlling all kinds of MIDI-enabled software and hardware.

All settings of this programming guide that do not refer to programming MMC data (MIDI Machine Control) will be demonstrated by using the PRO-53, a virtual synth from NATIVE INSTRUMENTS®.



An overlay for NATIVE INSTRUMENTS® PRO-53 is already included in the delivery. The assignment of the control elements on this overlay doesn't correspond to the programming guide because the guide is intended to serve merely as a programming example.

# I. Operating mode selection

Before you start making changes to the settings in order to control NATIVE INSTRUMENTS® PRO-53 using your BEHRINGER B-CONTROL, you'll have to choose an operating mode. Mode selection depends on the connectivity options on your computer. Selecting an operating mode is done as follows:

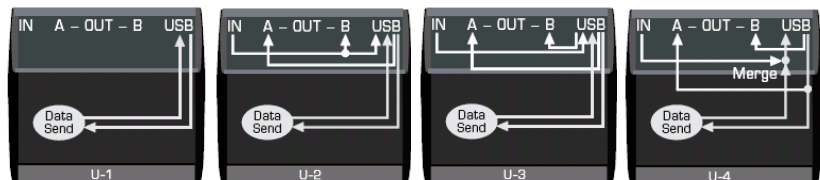


1. Keep the EDIT key pressed and press the STORE key at the same time. The B-CONTROL is now in the global setup menu.
2. Turn the first push encoder (TYPE) to select an operating mode.
3. Press the EXIT key to store this setting and leave the global setup menu.

**Note:** A more detailed description of operating modes can be found in the B-CONTROL operating manual.

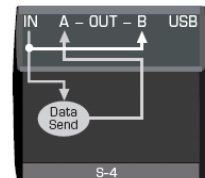
## 1. Mode selection with USB connection

If you connected your computer to the B-CONTROL via USB, select the modes U1 through U4.



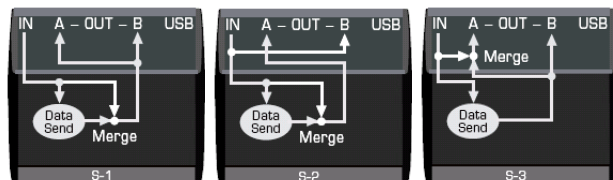
## 2. Mode selection with double MIDI connection

If you connected your B-CONTROL (MIDI IN and MIDI OUT A) to a PC MIDI interface using two MIDI cables, select mode S4. This mode allows parameter feedback without the MERGE function (the MIDI commands created in the B-CONTROL are not mixed with the incoming data).



## 3. Mode selection with a single MIDI connection

If you connected your B-CONTROL to a PC MIDI interface using a single MIDI cable (MIDI OUT A), select one of the modes S1 through S4 (this wiring configuration doesn't facilitate parameter feedback).



**Note:** The parameter feedback function of the B-CONTROL can only be used if the software you are controlling is capable of sending MIDI data. When it comes to the software used in this programming manual, namely, NATIVE INSTRUMENTS® PRO-53, this condition is met.

## II. Working with presets

The 32 presets in your BEHRINGER B-CONTROL let you store the settings you made and recall/use them later. When we say 'settings', we mean addressing MIDI commands in respect to the control elements of the B-CONTROL.

### 1. Recalling presets



When you power up the B-CONTROL, a preset is automatically loaded in the buffer. Of course, you can also load up a different preset using the PRESET arrow keys. The preset you selected is loaded into the buffer as soon as you let go of the PRESET key. You can start programming immediately after that.

### 2. Storing presets

After you assign the control elements of your B-CONTROL to the software parameters you want to control, you can store your settings. Do the following:



1. Press the STORE key. The LED blinks.
2. Press the STORE key again. The LED stops blinking. The preset is now stored.

**Note:** To store your settings, you can also use a destination preset different from the one that is currently selected: press the STORE key. The LED blinks. Using the arrow keys, select the desired destination preset. Press the STORE key. The LED and the display stop blinking, and the preset is stored. Details about using presets can be found in the B-CONTROL user manual.

**Note:** After you have programmed a B-CONTROL preset, you should always store it. Otherwise, all new settings will get lost if you turn off your B-CONTROL or switch to another preset.

### 3. Archiving presets

Once all storage slots on your B-CONTROL have been used up, you will probably want to archive your presets on an external medium. To do that, you may want to use a MIDI freeware programs such as SEND SX or MIDI OX. You can also put one MIDI track of your sequencer into recording mode and use the single preset dump function on your B-CONTROL:



1. Recall the preset you want to archive by using the PRESET arrow keys. The preset you selected is loaded up as soon as you let go of the preset key.

2. Put your MIDI program in receiving mode or select RECORD on your software sequencer.



3. Keep the EDIT key pressed and press the PRESET▶ key. The current preset is now being sent to the sequencer and can be stored on your computer.

**Note:** When in the global edit menu, the ALL DUMP function lets you externally save all presets of your B-CONTROL. This function is described in detail in the B-CONTROL user manual.

# III. Programming presets

Programming the BEHRINGER B-CONTROL means assigning individual control elements to one or several parameters of some MIDI hardware or software. In the following examples, we will control the filter section of NATIVE INSTRUMENTS® PRO-53 using the B-CONTROL (BCF2000 or BCR2000). To do that, you will need to be familiar with PRO-53's MIDI implementation (part of the documentation delivered with your NATIVE INSTRUMENTS® software).

Our goal:



- assign RESO, ENV AMT and KBD parameters of the PRO-53 to three B-CONTROL **encoders**.
- assign CUTOFF and HPF parameters of the PRO-53 to a B-CONTROL **push encoder**.
- assign ATTACK, DECAY, SUSTAIN and RELEASE parameters of the PRO-53 to four B-CONTROL **faders**.
- assign the INV parameter of the PRO-53 to a single **key** on the B-CONTROL.

There are two ways to do all this, and we will show both:

- You can either program your B-CONTROL in the EDIT mode (optimal way of doing things to learn how the B-CONTROL works and how to control it);
- Or you program your B-CONTROL in the LEARN mode (quickly done; done to assign functions to individual control elements).

## 1. Programming in manual EDIT mode

### 1.a Programming encoders (BCR2000 only)



Assigning RESO, ENV AMT and KBD parameters to the first three B-CONTROL encoders. PRO-53 MIDI implementation:  
RESO = CC 71, ENV AMT = CC 72 and KBD = CC 73 / in each case, possible values = 0 through 127.

**Programming the first encoder for controlling the RESO parameter:**



1. Keep the EDIT key pressed, briefly turn the first encoder and then release the EDIT key.
2. Push Encoder 1 (TYPE = MIDI command): select Control Change (CC).
3. Push Encoder 2 (CH = MIDI channel): Select a MIDI channel. This channel must correspond to the receiving channel on the PRO-53 (setup in the "MIDI Settings" windows of the plug-in).
4. Push Encoder 3 (PAR = parameter): Select controller 71.
5. Push Encoder 4 (VAL 1 = minimum value): Select the lowest value (0).
6. Push Encoder 5 (VAL 2 = maximum value): Select the highest value (127).
7. Push Encoder 6 (MODE = controller mode of the respective control elements): Select "Absolute" (Abs).
8. Push Encoder 7 (OPTION = LED circle performance): Select "1d."
9. Push Encoder 8 (DISPLAY VALUE = display performance): Select "ON" to have the display show parameter changes when the encoder is turned. No parameters are displayed if you select "OFF."
10. Exit the edit mode by pressing EXIT.

**Repeat these steps again to assign ENV AMT and KBD parameters to the second and the third encoders.**

## 1.b Programming push encoders



Assigning the *CUTOFF* parameter of the *PRO-53* to the rotary function of the first push encoder on the *B-CONTROL*. *PRO-53* MIDI implementation:  
*CUTOFF* = Control Change 70 / possible values = 0 through 127

1. Select one of the four push encoder groups by using the respective keys.
2. Keep the EDIT key pressed and briefly turn the first push encoder, then release the EDIT key.
3. Push Encoder 1 (TYPE): Select control change (CC).
4. Push Encoder 2 (CH): Select a MIDI channel. This channel must correspond to the receiving channel on the *PRO-53* (setup in the "MIDI Settings" windows of the plug-in).
5. Push Encoder 3 (PAR): Select controller 70.
6. Push Encoder 4 (VAL 1 = minimal value): Select the lowest value (0).
7. Push Encoder 5 (VAL 2 = maximum value): Select the highest value (127).
8. Push Encoder 6 (MODE): Select "Absolute" (Abs).
9. Push Encoder 7 (OPTION = LED circle performance): Select "Cut" (short for cutoff). If the encoder is connected, the entire LED circle lights up. When you turn the encoder to the right, the LED circle goes out clockwise so that only the lower right LED remains lit.
10. Push Encoder 8 (DISPLAY VALUE = display performance): Select "ON" to have the display show parameter changes when the encoder is turned. No parameters are displayed if you select "OFF."
11. Exit the edit mode by pressing EXIT.



Assigning the *HPF* parameter of the *PRO-53* to the key function of the first *B-CONTROL* push encoder. *PRO-53* MIDI implementation:  
*HPF* = Control Change 74 / possible values = 0 and 127.

1. Using the ENCODER GROUP key LEDs, you can make sure that the previously selected push encoder group is still active.
2. Keep the EDIT key pressed and then briefly press the first push encoder. After that, release the EDIT key.
3. Push Encoder 1 (TYPE): Select control change (CC).
4. Push Encoder 2 (CH): Select a MIDI channel. This channel must correspond to the receiving channel on the *PRO-53* (setup in the "MIDI Settings" windows of the plug-in).
5. Push Encoder 3 (PAR): Select controller 74.
6. Push Encoder 4 (VAL 1 = ON value): Select 127 as your value.
7. Push Encoder 5 (VAL 2 = OFF value): Select 0 as your value.
8. Push Encoder 6 (MODE): Select "Toggle ON."
9. Push Encoder 8 (DISPLAY VALUE = displays performance): Select "ON" to have the display show parameter changes when the encoder is turned. No parameters are displayed if you select "OFF."
10. Exit the edit mode by pressing EXIT.

## 1.c Programming faders (BCF2000 only)



Assigning the ATTACK, DECAY, SUSTAIN and RELEASE parameters of the PRO-53 to the first four B-CONTROL faders.

PRO-53 MIDI implementation: ATTACK = CC 75, DECAY = CC 76, SUSTAIN = CC 77, RELEASE = CC 78 / possible values = 0 through 127.

### Programming the first fader for controlling the ATTACK parameter:



1. Keep the EDIT key pressed and briefly move the first fader, then release the EDIT key.
2. Push Encoder 1 (TYPE): Select control change (CC).
3. Push Encoder 2 (CH): Select a MIDI channel. This channel must correspond to the receiving channel on the PRO-53 (setup in the "MIDI Settings" windows of the plug-in).
4. Push Encoder 3 (PAR): Select controller 75.
5. Push Encoder 4 (VAL 1 = minimal value): Select the lowest value (0).
6. Push Encoder 5 (VAL 2 = maximum value): Select the highest value (127).
7. Push Encoder 6 (MODE): Select "Absolute " (Abs).
8. Exit the edit mode by pressing EXIT.

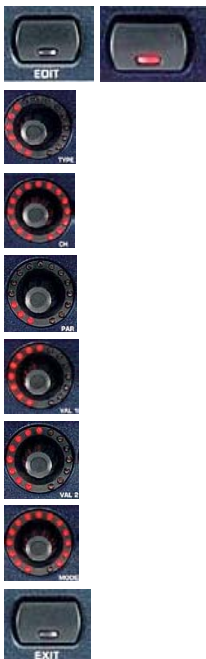
**Repeat these steps again to assign DECAY, SUSTAIN and RELEASE parameters to the second, third and fourth fader.**

## 1.d Programming keys



Addressing the INV parameter to one of the keys on the B-CONTROL.

PRO-53 MIDI implementation: INV = Control Change 79 / possible values = 0 and 127.



1. Keep the EDIT key pressed and briefly press the key you want to program, then release the EDIT key.
2. Push Encoder 1 (TYPE): Select control change (CC).
3. Push Encoder 2 (CH): Select a MIDI channel. This channel must correspond to the receiving channel on the PRO-53 (setup in the "MIDI Settings" windows of the plug-in).
4. Push-Encoder 3 (PAR): Select controller 79.
5. Push Encoder 4 (VAL 1 = ON value): Select 127 as your value.
6. Push Encoder 5 (VAL 2 = OFF value): Select 0 as your value.
7. Push Encoder 6 (MODE): Select "Toggle ON."
8. Exit the edit mode by pressing EXIT.



## 2. Programming in the automatic LEARN mode

Now you will learn how to program your B-CONTROL in LEARN mode using the examples in the first chapter of this programming guide. In doing so, you will not have to pay attention to the PRO-53's MIDI implementation parameters.

**Note:** All the steps in LEARN mode only work if the B-CONTROL was wired via a USB connection (U1 through U4) or via a "double" MIDI connection in one of the stand-alone operating modes (S1 through S4).

### 2.a Programming encoders (BCR2000 only)



*Assigning the RESO, ENV AMT and KBD parameters of the PRO-53 to the first three B-CONTROL encoders.*

#### **Programming the first encoder for controlling the RESO parameter:**

1. Keep the LEARN key pressed and briefly turn the first encoder, then release the LEARN key.
2. Turn the RESO rotary control on your PRO-53 using the mouse. The B-CONTROL display shows the received MIDI data. As soon as the data transfer is completed, "GOOD" appears in the display.

**Repeat these steps again to program the second and the third encoder for controlling ENV AMT and KBD parameters of the PRO-53.**

### 2.b Programming push encoders



*Assigning the CUTOFF parameter of the PRO-53 to the rotary function of the first B-CONTROL push encoder.*

1. Select one of the four push encoder groups by using the respective keys.
2. Keep the LEARN key pressed and briefly turn the first push encoder, then release the LEARN key.
3. Turn the CUTOFF control on your PRO-53 using the mouse. The B-CONTROL display shows the received MIDI data. As soon as the data transfer is completed, "GOOD" appears in the display.



*Assigning the HPF parameter of the PRO-53 to the key function of the first B-CONTROL push encoder.*

1. Using the ENCODER GROUP key LEDs, you can make sure that the previously selected push encoder group is still active.
2. Keep the LEARN key pressed and briefly push the first push encoder, then release the LEARN key.
3. Press the HPF key on your PRO-53 using the mouse. The B-CONTROL display shows the received MIDI data. As soon as the data transfer is completed, "GOOD" appears in the display.
4. You will have to program the second key function value in the EDIT mode. To do that, keep the EDIT key pressed and briefly press the push encoder that is already partially programmed, and then release the EDIT key.
5. Push Encoder 5 (VAL 2 = OFF value): Select 0 as your value.
6. Push Encoder 6 (MODE): Select "Toggle ON."
7. Exit the edit mode by pressing EXIT.

## 2.c Programming faders (BCF2000 only)



Assigning the *ATTACK*, *DECAY*, *SUSTAIN* and *RELEASE* parameters of the *PRO-53* to the first four *B-CONTROL* faders.

### Programming the first fader for controlling the **ATTACK** parameter:

1. Keep the LEARN key pressed and move the first fader, then release the LEARN key.
2. Turn the ATTACK control on your PRO-53 using the mouse. The B-CONTROL display shows the received MIDI data. As soon as the data transfer is completed, "GOOD" appears in the display.

**Repeat these steps again to program the second, the third and the fourth fader encoder for controlling DECAY, SUSTAIN and RELEASE parameters of the PRO-53.**

## 2.d Programming keys



Assigning the *INV* parameter of the *PRO-53* to a key on the *B-CONTROL*.

1. Keep the LEARN key pressed and briefly press the key you want to program, then release the LEARN key.
2. Press the INV key on your PRO-53 using the mouse. The B-CONTROL display shows the received MIDI data. As soon as the data transfer is completed, "GOOD" appears in the display.
4. You will have to program the second key function value in the EDIT mode. To do that, keep the EDIT key pressed and briefly press the key that is already partially programmed, and then release the EDIT key.
5. Push Encoder 5 (VAL 2 = OFF value): Select 0 as your value.
6. Push Encoder 6 (MODE): Select "Toggle ON."
7. Exit the edit mode by pressing EXIT.

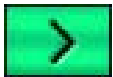
**NOTE:** After you have programmed a B-CONTROL preset (regardless of whether you did it in the LEARN or in the EDIT mode), you should always store it. Otherwise, all new settings will get lost if you turn off your B-CONTROL or switch to another preset.

### 3. Programming MMC commands

The standardized MIDI MMC data is intended for controlling the transport functions of a sequencer (Play, Rec, Pause, etc). For the B-CONTROL to be able to control these functions, you will first have to activate the MMC receive function on your sequencer.

Example: We want to assign the PLAY, STOP, FWD and REW transport functions of a software sequencer to the four keys on the B-CONTROL located on the bottom right (other MMC commands are shown in the push encoder addressing table in the user manual of your B-CONTROL).

#### 3.a MMC in the manual EDIT mode



*Assigning the PLAY, STOP, FWD and REW sequencer transport functions to the key block at the bottom right of your B-CONTROL.*



##### **Programming one of those keys for the PLAY command:**

1. Keep the EDIT key pressed and briefly press the key you want to program, then release the EDIT key.
2. Push Encoder 1 (TYPE = MIDI command type): Select MMC.
3. Push Encoder 2 (CH = device number): Select an MMC device number. This number must correspond to the receiving channel on the sequencer (as a default, select "ALL").
4. Push Encoder 3 (PAR = parameter): Select "PLAY."
5. Push Encoder 6 (MODE = frame rate): Select "OFF."
6. Exit the edit mode by pressing EXIT.

**Repeat these steps again to program the three remaining keys for controlling STOP, FWD and REW transport functions.**

#### 3.b MMC in the automatic LEARN mode

**Note:** All the steps in LEARN mode only work if the B-CONTROL was wired via a USB connection (U1 through U4) or via a "double" MIDI connection in one of the stand-alone operating modes (S1 through S4).



*Assigning the PLAY, STOP, FWD and REW sequencer transport functions to the key block at the bottom right of your B-CONTROL.*



##### **Programming one of those keys for the PLAY command:**

1. Keep the LEARN key pressed and briefly press the key you want to program, then release the LEARN key.
2. Press the PLAY key on the sequencer's transport panel. The display on the B-CONTROL shows the received MIDI data. As soon as the data transfer is complete, "GOOD" is shown in the display.
3. Exit the edit mode by pressing EXIT.

**Repeat these steps again to program the three remaining keys for controlling STOP, FWD and REW transport functions.**