

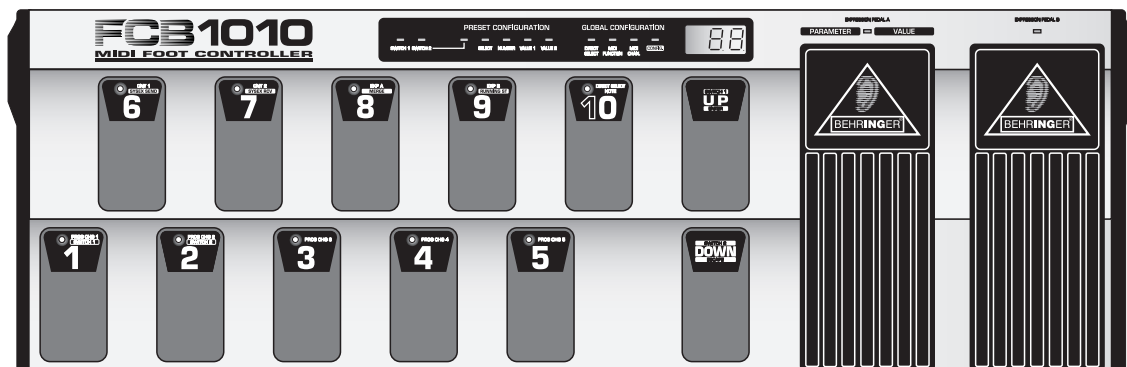
# FCB1010

# MIDI FOOT CONTROLLER

## User's Manual

Version 1.2 September 2001

ENGLISH



**BEHRINGER**  
INSTRUMENT AMPLIFICATION

## SAFETY INSTRUCTIONS

**CAUTION:** To reduce the risk of electric shock, do not remove the cover (or back). No user serviceable parts inside; refer servicing to qualified personnel.



**WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure—voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual.

### DETAILED SAFETY INSTRUCTIONS:

All the safety and operation instructions should be read before the appliance is operated.

#### **Retain Instructions:**

The safety and operating instructions should be retained for future reference.

#### **Heed Warnings:**

All warnings on the appliance and in the operating instructions should be adhered to.

#### **Follow instructions:**

All operation and user instructions should be followed.

#### **Water and Moisture:**

The appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool etc.).

#### **Ventilation:**

The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

#### **Heat:**

The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

#### **Power Source:**

The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

#### **Grounding or Polarization:**

Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

#### **Power-Cord Protection:**

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles and the point where they exit from the appliance.

#### **Cleaning:**

The appliance should be cleaned only as recommended by the manufacturer.

#### **Non-use Periods:**

The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

#### **Debris and Liquid Entry:**

Care should be taken that debris and/or liquids do not enter the enclosure through openings.

#### **Damage Requiring Service:**

The appliance should be serviced by qualified service personnel when:

- The power supply cord or the plug has been damaged; or
- Debris or liquid has entered the appliance; or
- The appliance has been exposed to rain; or
- The appliance does not appear to operate normally or exhibits a marked change in performance; or
- The appliance has been dropped, or the enclosure damaged.

#### **Servicing:**

The user should not attempt to service the appliance beyond that which is described in the operating instructions. All other servicing should be referred to qualified service personnel.

## FOREWORD

Dear Customer,

Thank you very much for expressing your confidence in BEHRINGER products by purchasing the BEHRINGER MIDI FOOT CONTROLLER, and welcome to the family of BEHRINGER users worldwide.

I write this letter with great pleasure—it represents the culmination of many months of hard work delivered by our engineering team to reach a very ambitious goal: to present you with an outstanding device that gives you maximum flexibility and performance; both live on stage and in the studio.

In designing the new FCB1010, we aimed our focus on you, the discerning musician. We wanted to design a MIDI foot controller to satisfy the needs of ambitious guitarists, with some special functions to make it attractive for keyboard players as well. It meant a great amount of work—days and nights to accomplish this goal. But it was fun, too. Developing a product usually brings a lot of people together, and what a great feeling it is when everybody who participated in such a project can be proud of what we've achieved.

It is our philosophy to share our joy with you, because you are the most important member of the BEHRINGER team. With your highly relevant suggestions for new products you've greatly contributed to shaping our company and making it successful. In return, we guarantee you uncompromising quality (manufactured under ISO9000 certified management system) as well as excellent technical and audio properties at an extremely favorable price. All of this will enable you to fully unfold your creativity without being hampered by budget constraints. We are often asked how it is possible to produce such high-grade devices at such unbelievably low prices. The answer is quite simple: it's you, our customers! Many satisfied customers mean large sales volumes, enabling us to get favorable purchases on components, etc. Isn't it only fair to pass this benefit back to you? Because we know that your success is our success, too!

I would like to thank all people whose help on "Project FCB1010" has made it a reality. Everybody has made very personal contributions, from the designers to many staff members, and finally to you, the user of BEHRINGER products.

My friends, it's been worth the trouble!

Thank you very much,

A handwritten signature in black ink, appearing to read 'U. Behringer', with a long horizontal flourish extending to the right.

Uli Behringer

# MIDI FOOT CONTROLLER

Ultra-flexible MIDI FOOT CONTROLLER with two expression pedals and MIDI merge function

- ▲ 10 banks of presets, each with 10 fully user-editable presets customized for BEHRINGER amplifiers
- ▲ Two expression pedals with freely assignable MIDI channel, controller number and range
- ▲ Simultaneous transmission of five MIDI program change commands and two MIDI controllers per preset
- ▲ MIDI NOTE commands for trigger and tap-tempo applications
- ▲ Two programmable, relais controlled SWITCH jacks, e.g. to select channels on any guitar amp
- ▲ Enhanced ergonomic design
- ▲ No need to take a seat—everything can be easily programmed while standing up
- ▲ Global Setup allows for individual customization
- ▲ MIDI SysEx backup function
- ▲ MIDI MERGE function allows for SOFT THROUGH and merging of controller and input data
- ▲ Built-in power supply ensures trouble-free operation
- ▲ Open architecture for future software upgrades
- ▲ Extremely rugged construction ensures long life even under the most demanding conditions
- ▲ Manufactured under ISO9000 certified management system


---

# TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>6</b>
1.1 Design concept .....	6
1.2 Before you begin .....	6
1.3 Control elements .....	7
1.3.1 Front panel .....	7
1.3.2 Rear panel .....	8
<b>2. PROGRAMMING THE FCB1010 .....</b>	<b>8</b>
2.1 Selecting BANKS and PRESETS .....	8
2.2 GLOBAL SETUP .....	10
2.3 Quick Start Guide for PRESET programming .....	11
2.4 Detailed PRESET programming .....	12
2.4.1 Programming PROGRAM CHANGES and SWITCHES .....	12
2.4.2 Programming CONTROL CHANGES and SWITCHES .....	12
2.4.3 Programming EXPRESSION PEDAL A/B and/or SWITCHES .....	13
2.4.4 Programming the NOTE function and/or SWITCHES .....	13
2.4.5 TAP-TEMPO function .....	14
2.5 Data storage .....	15
2.5.1 Saving the FCB1010 memory with the help of SysEx dumps .....	15
2.5.2 Receiving SysEx dumps .....	15
2.6 Restoring all original settings .....	16
<b>3. INSTALLATION .....</b>	<b>16</b>
3.1 Connections (general) .....	16
<b>4. MIDI – A STANDARD, A REVOLUTION .....</b>	<b>16</b>
4.1 MIDI connections .....	16
4.2 MIDI data format .....	17
4.2.1 NOTE ON and NOTE OFF messages .....	17
4.2.2 CONTROL CHANGE messages .....	17
4.2.3 PROGRAM CHANGE messages .....	17
4.2.4 Running Status .....	18
<b>5. APPENDIX .....</b>	<b>18</b>
5.1 MIDI Implementation .....	18
<b>6. SPECIFICATIONS .....</b>	<b>19</b>
<b>7. WARRANTY .....</b>	<b>20</b>

## 1. INTRODUCTION

Congratulations! With the BEHRINGER MIDI FOOT CONTROLLER FCB1010 you purchased an ultra-flexible controller unit for a wide range of applications, whether you are a guitarist, keyboard player or studio engineer: 10 BANKS with 10 PRESETS each and two fully user-programmable expression pedals will give you enough flexibility to manage your MIDI equipment. Guitar players will particularly appreciate the option of selecting channels using two analog SWITCHES, as they allow you to fully control both amplifier and effects from one “switching center”. And with its ultra-rugged enclosure and built-in power supply the FCB1010 is absolutely ready for the road, too. The easy-to-use programming interface gives you fun instead of frustration, and invites you to fully exploit the capabilities of your MIDI equipment.

 **The operating instructions given in this manual will introduce you to the FCB1010 and the host of functions it offers. After reading the manual carefully, please keep it on hand for future reference.**


### 1.1 Design concept


The philosophy behind BEHRINGER products guarantees a no-compromise circuit design and employs only the best components. To complement this design the choice of components includes high-tolerance resistors and capacitors, switches and several other stringently selected elements.

The FCB1010 was built on the basis of SMD technology (Surface Mounted Device). These sub-miniature components known from aerospace technology allow for an extreme packing density and enhance the unit's reliability. Additionally, the FCB1010 was manufactured in compliance with BEHRINGER's stringent quality control.

### 1.2 Before you begin

Your FCB1010 was carefully packed in the factory and the packaging is designed to protect the unit from rough handling. Nevertheless, we recommend that you carefully examine the packaging and its contents for any signs of physical damage, which may have occurred during transit.

 **If the unit is damaged, please do not return it to BEHRINGER, but notify your dealer and the shipping company immediately, otherwise claims for damage or replacement may not be granted. Shipping claims must be made by the consignee.**

 **Before you connect your FCB1010 to the mains, please make sure that your local voltage matches the voltage required by the unit:**

Three triangular markings can be found on the fuse holder at the AC power connection socket. Two of these three triangles will be aligned with one another. The FCB1010 is set to the operating voltage shown next to these markings and can be switched over by twisting the fuse holder by 180°. **IMPORTANT: This does not apply to export models designed only for 115 V AC!**

The mains connection is made by using the enclosed mains cable and a standard IEC receptacle. It meets all of the international safety certification requirements.

 **Please make sure that all units have a proper ground connection. For your own safety, never remove or disable the ground connector of the unit or of the AC power cable.**

MIDI connections (IN and OUT/THRU) are made using standard DIN connectors, the corresponding data are transmitted via potential-free opto-couplers. The two switching outputs use relay contacts for galvanic separation and are connected via stereo phone jack cables.

Please see chapters 3 “INSTALLATION” and 4.1 “MIDI Connections” for further details.

## 1.3 Control elements

### 1.3.1 Front panel

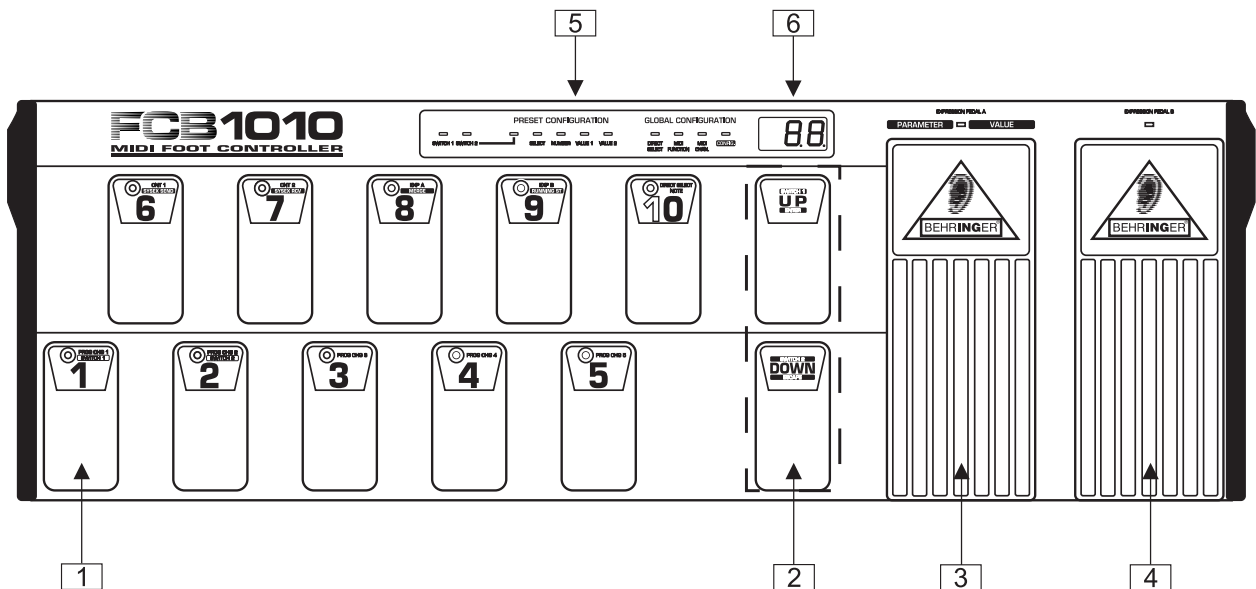



Fig. 1.1: Front panel control elements

- 1 The **foot switches 1 through 10/0** allow you to select PRESETS, program your FCB1010 and enter data in programming mode.
  - 2 The **UP/DOWN switches** are used to scroll through the various BANKS and programming levels. In programming mode, UP and DOWN are your ENTER and ESCAPE keys respectively.
-  **When DIRECT SELECT mode is activated (see chapter 2 “PROGRAMMING THE FCB1010”), the UP/DOWN switches are no longer needed for BANK selection and are free to perform a special function: in the GLOBAL SETUP menu you can program them to control the SWITCH RELAYS (UP: SWITCH 1 RELAY, DOWN: SWITCH 2 RELAY). In this case, you can toggle between the preprogrammed SWITCH settings, each time you step on these switches.**
- 3 **EXPRESSION PEDAL A.** Allows you to change controller values continuously. In programming mode, the pedal is used for data entry.
  - 4 **EXPRESSION PEDAL B.** Allows you to change controller values continuously.
  - 5 **STATUS-LEDs.** The yellow LEDs display the current status of the PRESET programming or GLOBAL SETUP functions.
  - 6 **LED-Display.** Informs you about the currently selected BANK/PRESET number. In programming mode, it displays any value changes.

### 1.3.2 Rear panel

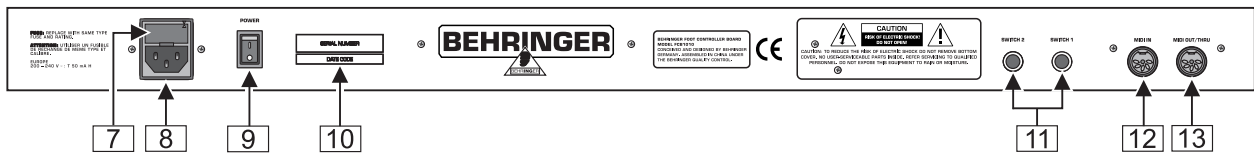


Fig. 1.2: Rear panel connectors

- 7 **FUSE HOLDER / VOLTAGE SELECTOR.** Please make sure that your local voltage matches the voltage indicated on the unit, before you attempt to connect and operate the FCB1010. Blown fuses may only be replaced by fuses of the same type and rating. Some models allow for inserting the fuse holder in two different positions, in order to switch over from 230-V to 115-V operation, and vice versa. Please note that for 115-V operation outside Europe, you need to use a fuse of a higher rating (see chapter 3 "INSTALLATION").
- 8 **IEC POWER CONNECTOR.** Use the enclosed power cord to connect the unit to the mains.
- 9 **POWER switch.** Use this switch to switch the FCB1010 on or off.
- 10 **SERIAL NUMBER.** Please take the time to have the warranty card filled out completely, and return it within 14 days after the date of purchase, so as to be entitled to benefit from our extended warranty. Or use our online registration option available on the World Wide Web under [www.behringer.com](http://www.behringer.com).
- 11 **SWITCHES 1 and 2.** Use these jacks to connect your amplifier for channel selection (mono or stereo phone jack cable).
- 12 **MIDI IN.** The MIDI IN of your FCB1010 connects to a sequencer or similar device, in order to download the memory data saved before with the help of the MIDI SysEx function. Additionally, data can be looped through the FCB1010 and merged with other data using the MIDI MERGE function. Subsequently, the combined data are available at the MIDI OUT/THRU connector.
- 13 **MIDI OUT/THRU.** Use this jack to connect the devices you wish to control from your FCB1010. The SOFT THRU circuit allows you to loop through any signals present at the MIDI IN of your FCB1010, merge them with the unit's own data stream, and finally output the combined data at the MIDI OUT.

## 2. PROGRAMMING THE FCB1010

In this chapter you will learn to program your FCB1010 and adapt it to your specific MIDI set-up. But don't worry, you won't have to learn a programming language before you could give your FCB1010 a single MIDI command. The unit will perform all functions for you, one after the other. Simply make and confirm your choices. If particular functions prompt you to enter a parameter, this will be covered specifically. Let's begin with...

### 2.1 Selecting BANKS and PRESETS

There are two options to select a BANK and the PRESETS it contains. Which one you use depends on the DIRECT SELECT parameter in the GLOBAL SETUP menu. If DIRECT SELECT is on, you can use the PRESET foot switches to directly select the BANK number followed by the PRESET number. If DIRECT SELECT is off, you need to step through the various BANKS (using the UP/DOWN switches), then select a PRESET from a bank. The default setting is OFF. The illustrations below show the two options.

Let's assume you wish to select PRESET #1 from BANK #3...



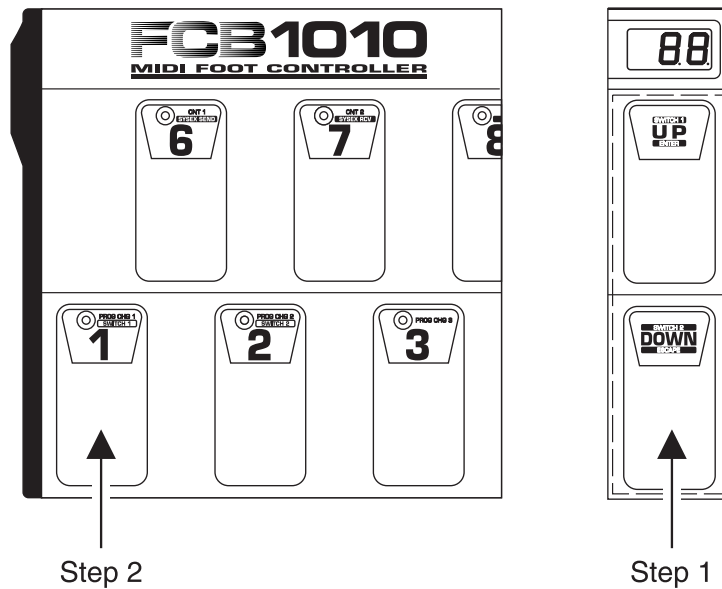


Fig. 2.1: PRESET selection with DIRECT SELECT disabled

Step 1: Use the UP/DOWN switches to go to the BANK that contains the PRESET of your choice (here: BANK #3).

Step 2: Select the PRESET you wish to use (here: PRESET #1).

If DIRECT SELECT is on, do as follows to select PRESET #1 from BANK #3:

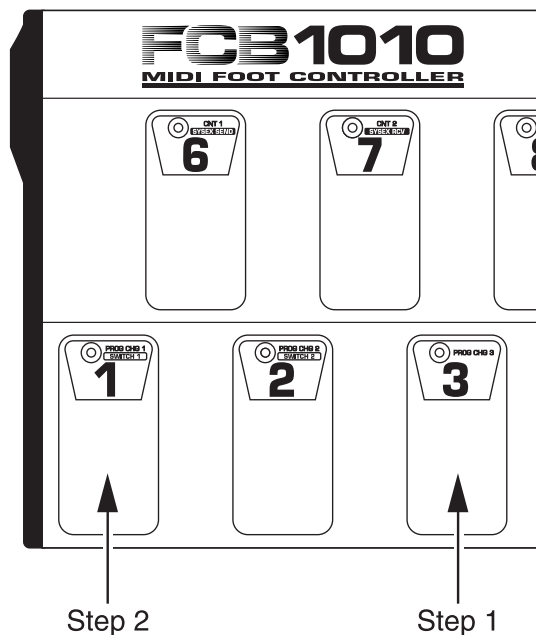


Fig. 2.2: PRESET selection with DIRECT SELECT enabled

Step 1: Select the BANK of your choice (here: BANK #3) by stepping on foot switch #3.

Step 2: Select the PRESET you wish to use (here: PRESET #1) by stepping on foot switch #1.

As this example shows, the DIRECT SELECT feature gives you a faster access to BANKS and PRESETS than without this function. Which option to use is entirely up to you. As long as you need the PRESETS from one BANK only, it will be advisable to disable the DIRECT SELECT function.

## 2.2 GLOBAL SETUP

In the GLOBAL SETUP menu you can set the parameters that apply to both the PRESETS and FUNCTIONS of your FCB1010 (e.g. MIDI channel selection, SYSEX SEND & RCV, DIRECT SELECT etc.).

- ▲ Keep the DOWN switch pressed during power-up for about 2.5 s to enter GLOBAL SETUP mode. The DIRECT SELECT LED in the display lights up.
- ▲ Enable/disable DIRECT SELECT with foot switch 10/0. As long as the LED of foot switch 10/0 lights up, DIRECT SELECT is activated.
- ▲ Press UP to go to the next level. The MIDI FUNCTION LED in the display starts flashing.
- ▲ Select a MIDI function whose MIDI channel you wish to edit, by pressing one of the foot switches 1 through 10/0:

Switch	MIDI function
1	PRG CHG 1
2	PRG CHG 2
3	PRG CHG 3
4	PRG CHG 4
5	PRG CHG 5
6	CNT 1
7	CNT 2
8	EXP A
9	EXP B
10/0	NOTE

Tab. 2.1: Foot switches and assigned MIDI functions

- ▲ The LED of the foot switch which corresponds to the respective MIDI function starts flashing.
- ▲ Press UP/ENTER to confirm the selected MIDI function. The MIDI CHAN. LED and the number in the display light up.
- ▲ Choose the MIDI channel for the selected function, either directly via foot switches 1 through 10/0 or by using the EXPRESSION PEDAL A.
- ▲ Press UP/ENTER to confirm the chosen value and to go to the next level, or press DOWN/ESCAPE to cancel.
- ▲ CONFIGURATION (the CONFIG. LED lights up. This, however, requires that UP/ENTER has been activated):  
On this level you can choose from the following functions assigned to the foot switches as shown in table 2.2:

Switch	Function	Action
1	SWITCH 1	Determines whether the UP switch controls SWITCH 1 relay ("toggle") with DIRECT SELECT on.
2	SWITCH 2	Determines whether the DOWN switch controls Switch 2 relay ("toggle") with DIRECT SELECT on.
6	SYSEX SEND	Sends the entire memory as a sysex dump.
7	SYSEX RCV	When this switch is pressed, the FCB1010 waits for the reception of system-exclusive data. Switch LED goes out when the data have been received correctly.
8	MERGE	Allws to merge MIDI IN data with FCB1010-generated data. The combined data stream is subsequently output at the MIDI OUT.
9	RUNNING STATUS	Enables/disables Running Status feature. Serves to make efficient use of the MIDI transmission rate. The MIDI Status Byte from the Expression Pedals is sent only if it differs from the preceding Status Byte.

Tab. 2.2: Assignment of foot switches in CONFIGURATION setup menu

Basically, functions in the CONFIGURATION mode are activated as soon as the LED of the respective foot switch lights up.

▲ Press UP/ENTER to return to point 2 (DIRECT SELECT), or DOWN to return to point 6 (MIDI channel selection). In this way, you can easily scroll through the categories DIRECT SELECT, MIDI FUNCTION and CONFIG.

▲ Press DOWN (> 2.5 s) in order to quit GLOBAL SETUP.

 In order to save your settings, it is important to press DOWN (> 2.5 s)!

## 2.3 Quick Start Guide for PRESET programming

For each of the 100 PRESETS you can determine which MIDI functions shall be transmitted as soon as you select the respective PRESET. For instance, you can send five different program change instructions, two controller commands, two different controller values (using the expression pedals) and a Note On command to the connected equipment at the same time. It is up to you to determine, which commands are stored in a PRESET. Do as follows to program the functions to be sent with each PRESET:

▲ Select the PRESET you wish to edit.

▲ Press DOWN for more than 2.5 s to enter PRESET programming mode. The number in the display disappears while the green SWITCH 1/SWITCH2 LED in the display starts flashing.

▲ Use foot switches 1 and 2 to edit the status of the SWITCHES. The current status is indicated by the foot switch LED and the corresponding SWITCH LED in the acrylic display. For further details see chapter 3.1 “Connections (general)”.

 Please note that the status of the SWITCHES can also be toggled with UP (SWITCH 1) and DOWN (SWITCH 2) if DIRECT SELECT is enabled. The only prerequisite is that this function has been enabled for both SWITCHES in the CONFIGURATION menu (GLOBAL SETUP).

▲ Confirm with UP/ENTER. The SELECT LED in the display lights up.

▲ Enable/disable specific MIDI functions by keeping the corresponding foot switch pressed (about 1.5 s). Once a MIDI function has been activated, the respective foot switch LED lights up. Active MIDI functions can be selected for editing by shortly pressing their foot switch (as long as SELECT lights up in the display, i.e. the foot switch LED flashes). The foot switch LED will start flashing immediately. You can choose from the following functions:

Switch	MIDI function	Action
1	PRG CHG 1	Program change command #1
2	PRG CHG 2	Program change command #2
3	PRG CHG 3	Program change command #3
4	PRG CHG 4	Program change command #4
5	PRG CHG 5	Program change command #5
6	CNT 1	Controller 1
7	CNT 2	Controller 2
8	EXP A	Expression Pedal A
9	EXP B	Expression Pedal B
10/0	NOTE	Transmits a MIDI note


Tab. 2.3: Foot switch assignment in PRESET programming mode

 The MIDI channels for each MIDI function are not set in PRESET programming mode, but globally for all PRESETS (see chapter 2.2 “GLOBAL SETUP”).

▲ Confirm your selection with UP/ENTER, in order to start programming the selected MIDI function, or cancel with DOWN/ESCAPE. Use foot switches 1 through 10/0 or EXPRESSION PEDAL A to enter the parameter values of your choice.

1) If you selected PROGRAM CHANGE as the MIDI function to be edited, you can now enter a program change number from 1 through 128 and confirm your selection with UP/ENTER.

- 2) If you selected CNT1 or CNT2, you can now enter the number of the controller to be sent (0 through 127) when you press the corresponding foot switch. After confirming your selection with UP/ENTER you can now select a controller value (0 through 127). Confirm your selection with UP/ENTER.

 **The EXPRESSION PEDALS require two controller values. If you selected one of these pedals as the MIDI function to be edited, you can enter the first controller value here, which corresponds to the lower limit of the parameter range that is sent via MIDI. Please note that the first controller value must be smaller than the second one!**

- 3) If you selected EXP A or EXP B, you can now enter the controller number the EXPRESSION PEDAL of your choice is aimed to send values for. Confirm your selection with UP/ENTER and enter the lower value (pedal up). Confirm with UP/ENTER. Afterwards, enter the upper value (pedal pressed down completely) and confirm once again with UP/ENTER.

 **You can quit the programming mode at any time by means of a long press on DOWN. Any confirmed entries will be stored with the currently selected PRESET.**

 **How to program the NOTE function is explained in chapter 2.4.4.**

## 2.4 Detailed PRESET programming

### 2.4.1 Programming PROGRAM CHANGES and SWITCHES

- ▲ Select the PRESET you wish to edit.
- ▲ Press DOWN for more than 2.5 s to enter PRESET programming mode. The green SWITCH 1/SWITCH 2 LED in the display starts flashing.
- ▲ Enable/disable the SWITCHES using foot switches 1 and/or 2 and confirm your selection with UP/ENTER. The SELECT LED in the display lights up.
- ▲ Select the PROGRAM CHANGE item you wish to program (foot switches 1 through 5), by briefly pressing the corresponding foot switch. The foot switch's LED starts flashing. Please note that the assigned MIDI function must be enabled for this feature to work. You can enable/disable each MIDI function by means of a long foot switch press.
- ▲ Confirm your selection with UP/ENTER. The NUMBER LED in the display lights up.
- ▲ Use the foot switches or EXPRESSION PEDAL A to enter the program change number you wish to transmit (1 through 128) with the PRESET.
- ▲ Confirm your selection with UP/ENTER. The SELECT LED in the display lights up.
- ▲ Quit PRESET programming mode by means of a long press on DOWN, or select another MIDI function for editing.

### 2.4.2 Programming CONTROL CHANGES and SWITCHES

- ▲ Select the PRESET you wish to edit.
- ▲ Press DOWN for more than 2.5 s to enter PRESET programming mode. The green SWITCH 1/SWITCH 2 LED in the display starts flashing.
- ▲ Enable/disable the switches as needed and confirm your selection with UP/ENTER. The SELECT LED lights up.
- ▲ Select the controller you wish to edit, by briefly pressing the corresponding foot switch (#6 or #7). The controller must be enabled for this feature to work. The LED of the respective foot switch starts flashing.
- ▲ Confirm your selection with UP/ENTER. The NUMBER LED in the display lights up.
- ▲ Use the foot switches 1 through 10/0 or EXPRESSION PEDAL A to enter the controller number (0 through 127).
- ▲ Confirm your selection with UP/ENTER. The VALUE 1 LED in the display lights up.

- ▲ Use the foot switches 1 through 10/0 or EXPRESSION PEDAL A to enter the controller value (0 through 127).
- ▲ Confirm your selection with UP/ENTER. The SELECT LED in the display lights up.
- ▲ Quit PRESET programming mode by means of a long press on DOWN, or select another MIDI function for editing.

### 2.4.3 Programming EXPRESSION PEDAL A/B and/or SWITCHES

- ▲ Select the PRESET you wish to edit.
- ▲ Press DOWN for more than 2.5 s to enter PRESET programming mode. The green SWITCH 1/SWITCH 2 LED in the display starts flashing.
- ▲ Enable/disable the switches as needed and confirm your selection with UP/ENTER. The SELECT LED in the display lights up.
- ▲ Select the EXPRESSION-PEDAL you wish to program, by briefly pressing the corresponding foot switch (#8 or #9) and confirm your selection with UP/ENTER. The selected pedal must be enabled for this feature to work. The LED corresponding to the foot switch starts flashing.
- ▲ Confirm with UP/ENTER. The NUMBER LED lights up.
- ▲ Enter the CONTROLLER number (0 through 127) using foot switches 1 through 10/0 or EXPRESSION PEDAL A.
- ▲ Confirm your selection with UP/ENTER. The VAL1 LED lights up.
- ▲ Use the foot switches 1 through 10/0 or EXPRESSION PEDAL A to enter the MIN. value (this is the value the FCB1010 transmits when the pedal is up).
- ▲ Confirm your selection with UP/ENTER. The VAL2 LED lights up.
- ▲ Use the foot switches 1 through 10/0 or EXPRESSION PEDAL A to enter the MAX. value (this is the value the FCB1010 transmits when the pedal is pressed down completely).
- ▲ Confirm your selection with UP/ENTER. The SELECT LED lights up.
- ▲ Quit PRESET programming mode by means of a long press on DOWN, or select another MIDI function for editing.

### 2.4.4 Programming the NOTE function and/or SWITCHES

The NOTE function allows you to send a MIDI note, for example, to use the tap-tempo features offered by many MIDI devices.

- ▲ Select the PRESET you wish to edit.
- ▲ Press DOWN for more than 2.5 s to enter PRESET programming mode. The green SWITCH 1/SWITCH 2 LED in the display starts flashing.
- ▲ Enable/disable the switches as needed and confirm your selection with UP/ENTER. The SELECT LED in the display lights up.
- ▲ Briefly press foot switch 10/0 to select the NOTE function. "NOTE" must be enabled for this feature to work. The foot switch LED starts flashing.
- ▲ Confirm your selection with UP/ENTER. The NUMBER LED lights up.
- ▲ Use the foot switches 1 through 10/0 or EXPRESSION PEDAL A to enter the MIDI NOTE number you wish to send with the PRESET. You can choose from the values 0 through 127. The table below shows which musical notes are assigned to which MIDI notes (with a detailed list for the octave from C-2 to C-1; simply use this pattern to assign the remaining notes/octaves yourself).

Musical Note	MIDI Note Number
C-2	0
C#-2/Db-2	1
D-2	2
D#-2/Eb-2	3
E-2	4
F-2	5
F#-2/Gb-2	6
G-2	7
G#-2/Ab-2	8
A-2	9
A#-2/Bb-2	10
H-2	11
C-1	12
C0	24
C1	36
C2	48
C3 (Clef C)	60 (Yamaha Convention)
C4	72
C5	84
C6	96
C7	108
C8	120
G8	127

Tab. 2.4: Assignment of MIDI NOTE numbers

- ▲ Confirm your selection with UP/ENTER. The SELECT LED lights up.
- ▲ Quit PRESET programming mode by means of a long press on DOWN, or select another MIDI function for editing.

The NOTE function will be particularly useful for so-called tap-tempo applications. Many of today's multi-effects devices allow the user to enter the delay time by means of an on-board TAP button. The device measures the time between two TAP button presses and uses this interval to adjust the delay time. Often, this function can be remotely controlled via MIDI. In this case, "tapping" is the transmission of two subsequent NOTE ON commands, which is what the NOTE function of your FCB1010 does for you.

 **If you program the NOTE function with a PRESET, a NOTE ON command will be sent each time you select the PRESET. To "tap" the tempo, simply press the PRESET switch several times in the rhythm of the music.**

#### 2.4.5 TAP-TEMPO function

In addition to the NOTE function, which is used by many effects devices to "tap" the song tempo, the FCB1010 offers you another way to reach this goal: the TAP-TEMPO function also allows you to enter the song tempo, however, transmits a FCB1010-generated controller value to the controlled effects device, in order to adjust the delay time. Advantage: you can also control devices that cannot process NOTE commands, but only allow for changing the delay time by means of a MIDI controller.

 **The TAP-TEMPO function does not work with DIRECT SELECT enabled.**

The TAP-TEMPO function has no dedicated switch, but is activated as follows:

- ▲ Enter PRESET programming mode by means of a long press on DOWN. The green SWITCH 1/SWITCH 2 LED starts flashing. Confirm with UP/ENTER. The SELECT LED lights up.
- ▲ Select the NOTE function by briefly pressing foot switch 10/0. Please note that the NOTE function must be enabled. The foot switch LED starts flashing. Confirm your selection with UP/ENTER. The NUMBER LED lights up.

- ▲ Enter the maximum delay time of the controlled device. Calculate this time value by dividing the time in milliseconds by 10, then enter the NOTE value. Confirm your entry with UP/ENTER. The SELECT LED lights up.

 **Please note that the FCB1010 allows for a maximum delay time of 1,270 ms, which is due to the MIDI standard's maximum resolution of 7 bits (= 128 values).**

- ▲ Press foot switch #6 to activate Control Change 1 (CNT 1).
- ▲ Press UP/ENTER again. Now the FCB1010 prompts you to enter a controller number. The NUMBER LED lights up. Enter the controller number which the manufacturer of your effects device has preset for delay time changes. Confirm your selection with UP/ENTER. The VAL1 LED lights up.
- ▲ The VALUE to be entered now corresponds to the upper limit of the parameter range determined by the controlled device. That might sound a bit confusing, but it's quite easy: the manual that came with the device usually contains an effects table listing the parameter range to be input via MIDI in order to control the delay time. For example, the device might use the entire range from 0 through 127; or a limited range from 0 through 63, and so on. So, the VALUE parameter simply determines the resolution with which the delay time can be programmed. The higher the value, the higher the resolution.
- ▲ Confirm your entry with UP/ENTER. The SELECT LED lights up.
- ▲ Disable Control Change 1 (CNT 1) by means of a long foot switch press on foot switch #6. This is necessary because otherwise each time you select the PRESET used for tempo tapping, the FCB1010 would transmit the controller defined here (including the adjusted VALUE parameter), instead of the FCB1010-generated value.
- ▲ Quit PRESET programming mode by means of a long press on DOWN. Now, the TAP-TEMPO function is ready for use.

To use the tap-tempo feature, press the foot switch (which selects the PRESET just programmed) twice in the rhythm of the music, e.g. every crotchet or quaver note. The FCB1010 will calculate the delay time and send it to the receiving device, by means of the controller you selected before. If the interval between the two foot switch presses is greater than the maximum NOTE/NUMBER value, the FCB1010 will divide the time by 2 until it is equal to or smaller than the maximum value. Thus, a crotchet delay becomes a quaver or semiquaver delay, depending on which value can be processed in the receiving device.

## 2.5 Data storage

### 2.5.1 Saving the FCB1010 memory with the help of SysEx dumps

The FCB1010 allows you to transmit PRESETS in the form of system-exclusive data to a sequencer or other MIDI recorder. In this way, you can save your data or manage several MIDI set-ups (e.g. studio equipment, guitar equipment, etc.).

If you wish to save your data on an external sequencer/computer, please follow the instructions below:

- ▲ Connect the MIDI OUT of your FCB1010 to the MIDI IN of your sequencer/computer.
- ▲ Keep the DOWN switch pressed during power-up to enter the GLOBAL SETUP menu.
- ▲ Press UP until the CONFIGURATION LED lights up. Now the unit is in CONFIGURATION mode.
- ▲ Start the RECORD function on your sequencer/computer. Then press foot switch #6 to dump the FCB1010 data. Quit the GLOBAL SETUP menu by means of a long press on DOWN.

### 2.5.2 Receiving SysEx dumps

To send back FCB1010 data stored on a sequencer/computer before, please follow the instructions below:

- ▲ Keep the DOWN switch pressed during power-up to enter the GLOBAL SETUP menu.
- ▲ Press UP until the CONFIGURATION LED lights up. Now the unit is in CONFIGURATION mode.



- ▲ Press foot switch #7 (SYSEX RCV) to “tell” the FCB1010 to wait for system-exclusive data (the foot switch LED lights up). Start the PLAYBACK function on your sequencer/computer to play back the previously stored file. The foot switch LED flashes while the FCB1010 is receiving data. Once the data have been received correctly, the LED goes out. Now your programs are back in the FCB1010’s memory. Quit GLOBAL SETUP mode by means of a long press on DOWN.

## 2.6 Restoring all original settings

Keep the foot switches 1 and 6 pressed for about 2.5 s while powering up the device. This procedure overwrites all user-edited presets and replaces them by the original settings.

## 3. INSTALLATION

### 3.1 Connections (general)

Please use commercial-grade cables with phone plugs to connect the SWITCH outputs of your FCB1010 to your amplifier. Since these outputs are normalized, you can send both switching pulses from one SWITCH output, by using a stereo cable, which is useful in combination with amplifiers that have a stereo phone jack to select several functions (e.g. channel select and effect on/off). In this case, please use only one of the two SWITCH outputs with one stereo cable connected.

- 👉 **Find out whether or not your guitar amp supports a stereo connection via SWITCH 1 or SWITCH 2. Simply try and experiment to identify the switching configuration of your amp.**

## 4. MIDI – A STANDARD, A REVOLUTION

In the early 80’s several leading manufacturers of electronic musical instruments developed a common standard, which was soon to revolutionize the entire MI industry – both from a technical and musical point of view. The MIDI standard (short for: **M**usical **I**nstruments **D**igital **I**nterface) was invented to allow musical instruments of different makes to communicate with each other. What is surprising in view of the rapidly developing MI industry is the fact that this standard has basically not changed ever since, because it was designed with future upgrades in mind. So, the MIDI interface’s range of applications could be expanded over the years: from the simple connection of several keyboard instruments to one master keyboard to connecting whole studios and live set-ups within a single MIDI network – MIDI has become an infinite source of ideas and innovation. Numerous musicians recognized the versatility of this standard and created new and exciting worlds of sounds by combining different instruments to one homogeneous whole. It is important to know that the MIDI interface transmits no audio signals but only control data (e.g. key, program change or volume numbers)! MIDI is just an interface for the control and networking of devices and instruments.

At the heart of this network you could use your FCB1010 to control all of your amplifiers, effects and peripheral devices. Live on stage and in the studio you could control your entire equipment in real time. MIDI control data can be stored and edited on a computer, so that you can also use your FCB1010 to enter controller and program change information into your computer.

### 4.1 MIDI connections

The MIDI connectors on the rear of the unit are on internationally standardized 5-pin DIN jacks. To connect your FCB1010 to other MIDI devices you need a dedicated MIDI cable. Usually, commercially available cables are used. However, you can also use a two-conductor shielded cable (e.g. microphone cable) and two (rugged) 180° DIN plugs to make your own MIDI cable: pin 2 (center) = shield, pins 4 and 5 (right and left of pin 2) = internal conductor, pins 1 and 3 (the two outer pins) are not used. MIDI cables should not be longer than 15 meters.

- MIDI IN:* serves to receive recorded system-exclusive data or to merge any MIDI signals with FCB1010-generated data.



 **The FCB1010 has no dedicated MIDI THRU port. However, the data received at the MIDI IN can be routed to the MIDI OUT provided that the MERGE function is enabled.**

*MIDI OUT:* The MIDI OUT allows you to transmit data to any MIDI-compatible device/instrument.

## 4.2 MIDI data format

Although the FCB1010 is very easy to operate, it does make sense to know a few things about the format of MIDI data. Each MIDI command or message consists of up to three bytes (1 byte = 8 bits). There's a difference between status bytes and data bytes: status bytes define the type of a specific MIDI message, i.e. the actual instruction to be sent to a device, while data bytes contain the information or parameters defined by the corresponding status byte. One status byte can be followed by up to two data bytes.

There are various types of MIDI messages. Since the FCB1010 does not understand or transmit all of them, we will only deal with those that are of importance to you in this context.

### 4.2.1 NOTE ON and NOTE OFF messages

NOTE ON and NOTE OFF messages are essential MIDI messages for any keyboard virtuoso, as they allow to control remote instruments from one master keyboard or computer. The FCB1010, too, can send NOTE ON messages, however, in a different context: many effects devices allow for "tapping" delay times, etc., by measuring the time interval between two NOTE ON messages. With the FCB1010 you can "tap" delay times or song tempos by selecting a "NOTE" PRESET twice.

NOTE ON and NOTE OFF messages feature the following data format:

	Status Byte	Data Byte #1	Data Byte #2
<b>Note Off</b>	&8n (n=channel #)	Note #	Velocity
<b>Note On</b>	&9n (n=channel #)	Note #	Velocity

The channel number range is 1 through 16, the data byte range is 0 through 127. It should be noted though that NOTE OFF messages are not so common today (for reasons of data reduction, cf. Running Status). Usually, NOTE ON messages with zero velocity are transmitted instead. The FCB1010 follows this convention. By the way: when you program the NOTE function on your FCB1010 you only need to enter the note number, because notes are always transmitted with a velocity of 64.

### 4.2.2 CONTROL CHANGE messages

CONTROL CHANGE messages are the most powerful MIDI messages, as they allow you to select and automate plenty of parameters and functions. On your FCB1010 you can define and transmit CONTROL CHANGE messages, e.g. to change specific effects parameters in real time. The most important CONTROL CHANGE messages are:

Controller #	Function
07	Controls the overall volume of instruments on one MIDI channel
08	Balance
10	Pan
91	Reverb intensity

### 4.2.3 PROGRAM CHANGE messages

PROGRAM CHANGE messages are used to change presets or sounds in connected devices/instruments. The parameter range is 0 through 127. Almost all devices have a list enclosed which shows the program change number versus preset number assignment. Some units even allow you to freely assign program change commands to preset numbers. Please see the corresponding user's manual for detailed information.

#### 4.2.4 Running Status

Since the MIDI standard uses a serial transmission format, i.e. transmits data successively, it was soon found that the transmission rate is too low if the system is exploited to its full capacity. To make up for an audibly delayed transmission of MIDI data, the so-called Running Status was introduced, which suppresses the status byte in two or more identical MIDI messages that follow each other. For example, if the data bytes of a controller (e.g. volume) are changed continuously, the corresponding status byte is sent only once. Only the data byte changes are transmitted, as long as another status byte is sent, i.e. in each message transmitted you can eliminate 8 bits. This is also the reason why NOTE OFF messages are no longer used. When a keyboard player plays a scale on a keyboard and sends these data via MIDI to a computer, each NOTE ON message would be followed by a NOTE OFF message, each time a key is released. The Running Status would identify the NOTE OFF message as a new status byte and hence send it, which results in a data amount of 8 notes times 8 bits, i.e. 192 bits. Since NOTE ON messages belong to those MIDI messages that are used most often, it was decided to send NOTE ON messages with zero velocity instead. The audible effect is the same, but in the Running Status the data amount can be reduced by 7 times 8 bits, i.e. 56 bits. As a consequence, the overall data amount produced by the scale mentioned above is only 136 bits. With the FCB1010 you are free to switch the Running Status feature on or off.

## 5. APPENDIX

### 5.1 MIDI Implementation

MIDI Implementation Chart				
Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1-16		
	Changed	1-16		
Mode	Default	x	x	
	Messages	x	x	
Note Number		0-127	x	Programmable 1-128
Velocity	Note ON	0,64	x	
	Note OFF	x	x	
After Touch	Keys	x	x	
	Channels	x	x	
Control		0-127	x	
Progr. Change	True #	0	x	Programmable 1-128
System Exclusive		0	0	
System Common	Song Pos.	x	x	
	Song Sel.	x	x	
	Tune	x	x	
System Real Time	Clock	x	x	
	Commands	x	x	
Aux Messages	Local ON/OFF	x	x	
	All notes OFF	x	x	
	Active Sense	x	x	
	Reset	x	x	
Notes		Soft Thru / Merge Function		
O = YES, X = NO				
Mode 1:		OMNI ON		
Mode 2:		OMNI OFF		

Tab. 5.1: MIDI Implementation

## 6. SPECIFICATIONS

### MIDI INTERFACE

Type 5-pin DIN jacks IN and OUT / THRU

### DISPLAY

Type 3-digit LED

### SWITCHING OUTPUT

Type 1/4" jack (open)

### POWER SUPPLY

Mains voltage	USA/Canada	120 V ~, 60 Hz
	U.K./Australia	240 V ~, 50 Hz
	Europe	230 V ~, 50 Hz
	Export model (general)	100 - 120 V ~, 200 - 240 V ~, 50 - 60 Hz
Power consumption	10 W	
Fuse	100 - 120 V ~:	<b>T 100 mA H</b>
	200 - 240 V ~:	<b>T 50 mA H</b>
Mains connection	Standard IEC connector	

### PHYSICAL/WEIGHT

Dimensions (H x W x D)	approx. 2 3/8" (60 mm) x 27" (687 mm) x 8 3/4" (221 mm)
Weight	approx. 3.5 kg

BEHRINGER is constantly striving to maintain the highest professional standards. As a result of these efforts, modifications may be made from time to time to existing products without prior notice. Specifications and appearance may differ from those listed or illustrated.

## 7. WARRANTY

### § 1 WARRANTY CARD/ONLINE REGISTRATION

To be protected by the extended warranty, the buyer must complete and return the enclosed warranty card within 14 days of the date of purchase to BEHRINGER Spezielle Studiotechnik GmbH, in accordance with the conditions stipulated in § 3. Failure to return the card in due time (date as per postmark) will void any extended warranty claims.

Based on the conditions herein, the buyer may also choose to use the online registration option via the Internet ([www.behringer.com](http://www.behringer.com) or [www.behringer.de](http://www.behringer.de)).

### § 2 WARRANTY

1. BEHRINGER (BEHRINGER Spezielle Studiotechnik GmbH including all BEHRINGER subsidiaries listed on the enclosed page, except BEHRINGER Japan) warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year from the original date of purchase, in accordance with the warranty regulations described below. If the product shows any defects within the specified warranty period that are not due to normal wear and tear and/or improper handling by the user, BEHRINGER shall, at its sole discretion, either repair or replace the product.
2. If the warranty claim proves to be justified, the product will be returned to the user freight prepaid.
3. Warranty claims other than those indicated above are expressly excluded.

### § 3 RETURN AUTHORIZATION NUMBER

1. To obtain warranty service, the buyer (or his authorized dealer) must call BEHRINGER (see enclosed list) during normal business hours **BEFORE** returning the product. All inquiries must be accompanied by a description of the problem. BEHRINGER will then issue a return authorization number.
2. Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by BEHRINGER.
3. Shipments without freight prepaid will not be accepted.

### § 4 WARRANTY REGULATIONS

1. Warranty services will be furnished only if the product is accompanied by a copy of the original retail dealer's invoice. Any product deemed eligible for repair or replacement by BEHRINGER under the terms of this warranty will be repaired or replaced within 30 days of receipt of the product at BEHRINGER.
2. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. The warranty does not cover any such modification/adaptation, irrespective of whether it was carried out properly or not. Under the terms of this warranty, BEHRINGER shall not be held responsible for any cost resulting from such a modification/adaptation.

3. Free inspections and maintenance/repair work are expressly excluded from this warranty, in particular, if caused by improper handling of the product by the user.

This also applies to defects caused by normal wear and tear, in particular, of faders, potentiometers, keys/buttons and similar parts.

4. Damages/defects caused by the following conditions are not covered by this warranty:

- ▲ misuse, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals.
- ▲ connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used.
- ▲ damages/defects caused by force majeure or any other condition that is beyond the control of BEHRINGER.

5. Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the warranty.

6. If an inspection of the product by BEHRINGER shows that the defect in question is not covered by the warranty, the inspection costs are payable by the customer.

7. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer's expense. BEHRINGER will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, BEHRINGER will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order.

### § 5 WARRANTY TRANSFERABILITY

This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of BEHRINGER.

### § 6 CLAIM FOR DAMAGES

Failure of BEHRINGER to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of BEHRINGER exceed the invoiced value of the product.

### § 7 OTHER WARRANTY RIGHTS AND NATIONAL LAW

1. This warranty does not exclude or limit the buyer's statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract.
2. The warranty regulations mentioned herein are applicable unless they constitute an infringement of national warranty law.

---

The information contained in this manual is subject to change without notice. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording of any kind, for any purpose, without the express written permission of BEHRINGER Spezielle Studiotechnik GmbH.  
 BEHRINGER is a registered trademark. ALL RIGHTS RESERVED. BEHRINGER Instrument Amplification is a Division of BEHRINGER.  
 © 2001 BEHRINGER Spezielle Studiotechnik GmbH.  
 BEHRINGER Spezielle Studiotechnik GmbH, Hanns-Martin-Schleyer-Str. 36-38, 47877 Willich-Münchheide II, Germany  
 Tel. +49 (0) 21 54 / 92 06-0, Fax +49 (0) 21 54 / 92 06-30

---