TEControl
USB MIDI Breath and Bite
Controller 2

User Guide

For up to date information, including documentation and software, please visit the support pages at

https://www.tecontrol.se/products/usb-midi-breath-bite-controller-2/support

For general information about products email us at info@tecontrol.se

For technical questions and enquiries email us at support@tecontrol.se

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Correct Disposal of This Product (Applicable in countries with separate collection systems) This product should not be disposed of with other household waste at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this item from other types of waste and recycle it responsibly to promote the sustainable reuse of material resources. Please contact your local government office for details of where and how you can take these items for environmentally safe recycling.

WEEE registration numbers

- Belgium: 948212
- France: 1092827
- Germany: DE74275552
- Italy: IT21070000013240
- Netherlands: RL00039508
- Spain: 7698
- Sweden: SE5590006416
- UK: WEE/AU6409VE

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Introduction

With sample libraries getting better and better and physical modeling advancing to incredible realism, the need for good controllers is obvious.

Our breath controllers fill the gap left by Yamaha when they discontinued production of the BC3 breath controller. We like to think that we took over where Yamaha left, providing the MIDI community with not only a replacement but taking it to a new level.

To quickly get an overview of the past and present world of breath and wind controllers, we recommend checking out the following page:

http://www.patchmanmusic.com/WindControllerFAQ.html

1 Overview

The USB MIDI Breath and Bite Controller 2 (BBC2) is designed for musicians who want to add extreme expression and realism to their performance when using sample libraries. The BBC2 features four sensors and has four independent MIDI controllers which generate MIDI data corresponding to the amount of activation of each individual sensor.

- The Breath Controller uses the built-in piezoelectric pressure transducer as input.
- The Bite Controller uses the integrated bite sensor (located on the lower side of the mouthpiece) to measure the force applied through bite or lip pressure.
- The Nod and Tilt Controllers use the built-in accelerometer and respond to head position. The neutral position of both can be calibrated by the user. The Nod Controller responds to head up/down position; the Tilt Controller responds to lateral head tilt instead

The mouthpiece has an adjustable bleed valve and comes with a food-grade plastic cover that allows true bite control. The cover can be removed for cleaning and can easily be replaced if required.

The four controllers are completely independent and can be individually configured using the Configuration Utility. Besides MIDI CC the BBC2 can also send pitch bend and aftertouch.

With the downloadable Configuration Utility you can configure all the parameters as well as save and load your own presets in your computer.

A unique feature of the BBC2 is its ability to shape the response from sensor input to MIDI output. It also provides a monitor function simplifying the sensitivity adjustment. This way you can optimize the sensitivity to your own style of playing. The attack and decay filter controls can be set from 0 to several seconds. They allow you to make very smooth swells.

Signal processing algorithms guarantee full resolution over the configured sensor input ranges. The event-driven MIDI output streaming filters out redundant data not to overflow your MIDI input and assures lowest latency. MIDI messages are transmitted only when input changes cause a change in the MIDI output value.

1.1 System requirements

The BBC2 does not require installation of drivers or software. It will work straight out of the box with both Windows (XP or later) and Mac OS (10.5 or later).

If you need to change the default settings (for example the MIDI CC), you can optionally download the free Configuration Utility from our website.

2 Getting started

2.1 Installation

Connect the BBC2 to a USB port on your computer, which will detect it automatically and configure the operating system's built-in USB-MIDI class driver. The BBC2 will show as "Breath Controller X.Y-ZZZZZZZZ" in your applications, where X.Y is the firmware version and ZZZZZZZZ is the unique serial number.

2.2 Default settings

The BBC2 comes pre-configured with default settings and will work straight-out-of-the box. The default settings for the four controllers are as follows:

- Linear sensitivity
- Input and output ranges set to maximum
- Attack and decay filters set to minimum
- MIDI Message set to Control Change
- MIDI Channel 1

and the individual controllers are set to the following MIDI CCs

- Breath Controller CC2
- Bite Controller CC1
- Nod Controller CC12
- Tilt Controller CC13

3 Configuration Utility

3.1 Installation

The Configuration Utility is required for changing the settings and is available from our support webpage:

https://www.tecontrol.se/products/usb-midi-breath-bite-controller-2/support

Important: Version 5.0 or later is required. Older versions are not compatible with the BBC2.

Once you have downloaded the software, unzip the file and run the installer (Windows) or drag and drop the application in your favourite location (Mac). On Windows the installer will create a shortcut in the Start menu.

Starting the configuration Utility will show the following window
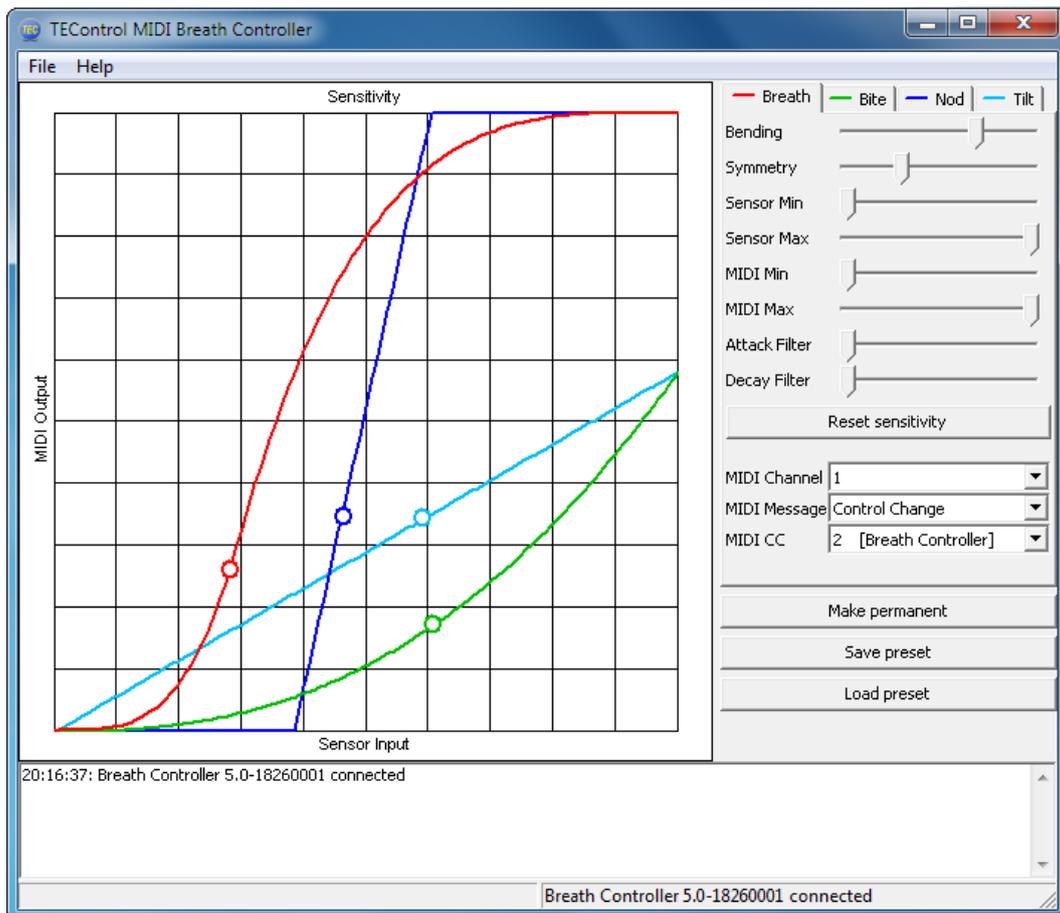
The top left part of the window (graphs) shows the sensitivity curves of all four sensors

simultaneously. The different curves are color coded according to the sensor tabs located on the right top side.

The four controllers are independently configurable and are selected by clicking the respective tab. Doing so brings up the individual sensor sliders and buttons. The Nod and Tilt tabs have one additional button which allows calibration of your head position.

Located at the bottom of the window is a message window which reports the response to your actions as well as potential error messages. Please, keep an eye on the messages displayed there to detect any problems.

When started, the Configuration Utility will try to detect the Breath Controller. If not found, the lower portion of the window will display the message "Waiting for controller..." indicating that you should check that the BBC2 is connected to your computer. If instead the controller is found, the window will display "Breath Controller X.Y-ZZZZZZZZ connected", indicating the firmware version and serial number.

3.2 How to configure

The 8 sliders of each tab allow tailoring the response from sensor input to MIDI value as well as adjusting the attack and decay timer for each controller separately.

- The Bending and Symmetry sliders change the shape of the response.
- The Input Min slider sets the lower threshold of the input signal. Any signal below the threshold will not cause any change in the output CC value, which will remain at the minimum output value.
- The Input Max slider sets the upper threshold of the input signal. Any signal above the threshold will not cause any change in the output CC value, which will remain at the maximum output value.
- The Output Min slider sets the minimum output CC value, which is output when the signal is at or below the lower threshold. This is useful if you don't want the CC value to drop to zero.
- The Output Max slider sets the maximum output CC value, which is output when the signal is at or above the upper threshold. This is useful if you want to limit the maximum CC value to less than 127.
- The Attack and Decay Filter sliders set the respective time constants individually. Setting the sliders fully left produce the fastest response (filter disabled); setting them fully right allows time constants of several seconds. This is very useful for semi-automatic swells.

Below the sliders there are the following additional controls:

- The Calibrate button is available only in the nod and tilt tabs. It allows bringing the current head position at the horizontal center of the sensitivity curve.
- The Reset sensitivity button resets the sensitivity to linear with full input and output ranges.
- The MIDI Channel drop-down list selects the MIDI channel to be used for the transmission of the MIDI messages, or optionally disables the controller. This is useful in conjunction with the MIDI learn function of many Virtual Instruments, or whenever it is desirable to inhibit a particular sensor.
- The MIDI CC drop-down list selects the actual controller to be used, for example CC1 [Modulation Wheel], CC2 [Breath Control] and so on. The MIDI CC is effective only when Control Change is selected in the MIDI Message drop-down list.
- The MIDI Message drop-down list offers, in addition to the above mentioned Control Change, other MIDI message options such as Aftertouch, Pitch Bend Up, Pitch Bend Down and Pitch Bend Both.

- The Make Permanent button stores the current settings in the Breath Controller's non-volatile memory so that they are remembered even when the device is removed from the computer. You can use this button as often as you wish.

- The Save Preset button allows storing the current settings in a file anywhere on your computer, for later retrieval.

- The Load Preset button allows to retrieve a previously saved file and apply the settings in it to the breath controller. Note, the file name must end in ".tec" otherwise it will not be possible to select it.

- The Enable/Disable Monitor button enables a circular marker that is displayed along the sensitivity curve and indicates the actual sensor input. This is very useful for tailoring the sensitivity to suit your playing style as well as calibrating the Nod and Tilt sensors.

Note that when either Aftertouch or any of the Pitch Bend options are selected the MIDI CC drop down is grayed out. Aftertouch is what the MIDI specification refers to as "channel pressure".

All changes to the settings take immediate effect but are lost when the computer is powered off or the device is removed from the computer. To store you settings permanently in the device, use the Make Permanent button. This means your settings are remembered when the device is unpowered. You can now move it to another computer with your favorite settings intact.

4 Configuring your DAW and VI

4.1 DAW

In your DAW/player software the breath controller must be selected as a MIDI input device in order to work. In your DAW you must also configure the MIDI input of the track you are playing or recording to "MIDI omni", "All MIDI inputs" or similar function in order to configure the track to respond to all MIDI controllers. This is necessary to allow controlling the instrument from both keyboard and breath controller.

Warning! Due to the nature of the breath and bite controllers the Breath and Bite MIDI signals will be left at the minimum (most commonly zero) value when you release the pressure (i.e. stop blowing). Depending on which CC you are controlling you might then not hear any sound without blowing or biting and it is possible to get deadlocked. For example suppose you first set the breath controller to CC 7 (volume); when you stop blowing your instrument volume will stay at zero value. If you now change the breath controller to some other CC, for example 11 (expression) no sound will be heard even when you blow since CC 7 (volume) is still at zero. Please, keep this in mind before contacting us. To solve the problem either restart your sample player or try the following:

- select the CC that might be left at zero
- while applying pressure change the CC to 1 (mod wheel)
- repeat if you have more CCs left at zero.

4.2 VIs

Just as any other MIDI controller, the MIDI CC sent by the breath controller must be matched to a CC accepted by the VI you want to control.
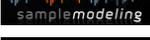
For example MIDI CC2 (Breath Controller) will have no effect on your instrument if the instrument does not respond to CC2. In this case you have to configure the breath controller to send another CC, for instance CC7 (Volume, most instruments respond to this) or CC11 (Expression, also available in most instruments).

Alternatively you can change the controls of your VI to match the default settings of the breath controller (most VIs allow this, but some don't - most notably EWQL play engine). If you want to control the expression of your VI with breath control, change the VI expression CC control to CC2.

Many VIs have a MIDI learn function for their controls which you can activate and then blow, bite, nod or tilt the breath controller to make the VI assign whatever CC comes from the breath controller to the selected parameter.

4.3 Compatibility

Compatibility has been verified with the following sample libraries:

- Adagio violas
- LA Scoring Strings LASS
- All instruments
- East West Quantum Leap (EWQL)
- Berlin Woodwinds.
- Symphobia 1 & 2 and True Strike 1 & 2
- All instruments
- Omnisphere, Trilian and Stylus RMX
- Albion
- Vienna Instrument PRO
- All instruments

We have not yet found any sample player incompatible with our breath controllers. There are of course many left to be tested and although we cannot guarantee compatibility there is no reason to believe our breath controllers are incompatible with any software implementing the USB-MIDI standards.

5 Caring for your breath controller

The inside of the piezoelectric pressure sensor is waterproof and is designed to withstand the humidity in your breath; condensation will exit through the bleed pipe.

The electronic circuit is of course not waterproof. Therefore you should take care not to allow humidity to enter it, which can happen if you put the whole enclosure in your mouth instead of just the mouthpiece.

The mouthpiece cover is removable for replacing or cleaning with water and dish detergent. Biting on the force sensor without the mouthpiece cover will seriously damage it, therefore always put the cover back after cleaning.

6 Declaration of conformity

Supplier's Name: **TEControl AB**

Supplier's Address: **Kalladalsv.42, 23197 Klagstorp, Sweden**

Supplier's email: info@tecontrol.se

declares that the product **USB Midi Breath & Bite Controller 2 (BBC2)** conforms to the following

EMC:
> EN 55022:2010
> EN 55024:2010
> ANSI C63.4 FCC 47 CFR Part 15, Subpart B, Class B Digital Device

RoHS:
> EN 50581:2012

CE   This product complies with the requirements of the RoHS Directive 2011/65/EU, the EMC Directive 2004/108/EC and carries the CE marking accordingly.

FC   This device complies with part 15 of the FCC Rules.Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Klagstorp, 25.10.2017

Toomas Erm
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