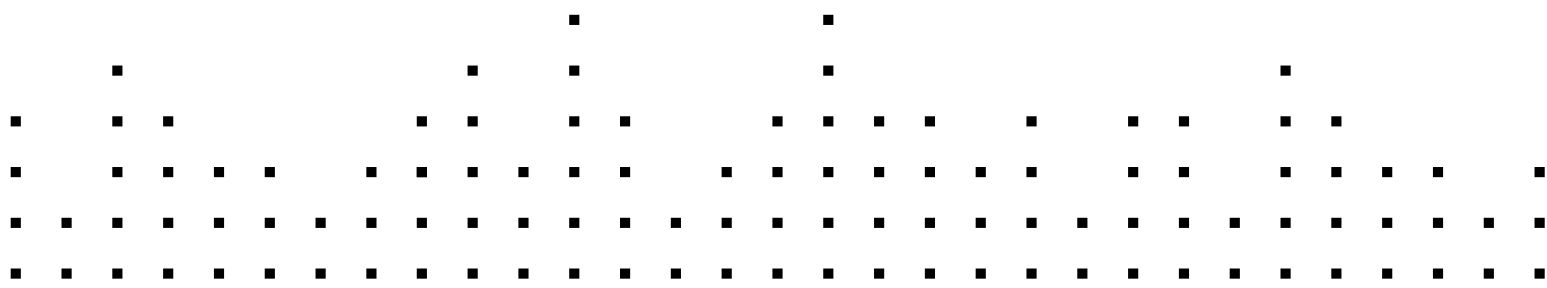


BERLIN

CONCERT GRAND



BERLIN CONCERT GRAND MANUAL



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1 Introduction

The NI Akoustik Piano series is a benchmark in sound quality, capturing the feel of the originals with unprecedented authenticity. The result is a uniquely warm, transparent and flexible sound, which delivers the same distinctive character of each individual piano in detail and can still be adjusted to meet specific needs.

The Akoustik Piano series takes advantage of groundbreaking sampling technology. The keys were sampled at varying velocities and great care was also taken to capture the entire sustain and release phases. The Layer Morphing technology generates a seamless dynamic gradient. The characteristic resonances caused by use of the pedals can be adjusted, as can the subtle mechanical noises of the pedals and keys themselves.

The additional benefits inherent in the exceptional quality of these world-class grand pianos was a privilege only a few could enjoy. The Akoustik Piano series makes these benefits, and the added pleasure they induce, accessible to everyone. We sincerely hope you enjoy BERLIN CONCERT GRAND.

– Your Native Instruments Team

1.1 About the BERLIN CONCERT GRAND Piano

Growing disillusioned with current piano-maker techniques, Carl Bechstein realized the need for a new type of piano design, one with a resonating body and enormous span of sound expression. In 1853, he crafted his achievement when he set up in Berlin, Germany. With his vision, he developed the Bechstein concept for sound and technique.

The Berlin Concert Grand's underlying model is one that is gentle in nature. Its duplex scale design provides subtle harmonic overtones which add to the tonal color and help shape the primary note. This piano is known for a clean, thin treble and strong, velvety bass, thus allowing players to produce powerful temperaments while retaining full freedom of expression.

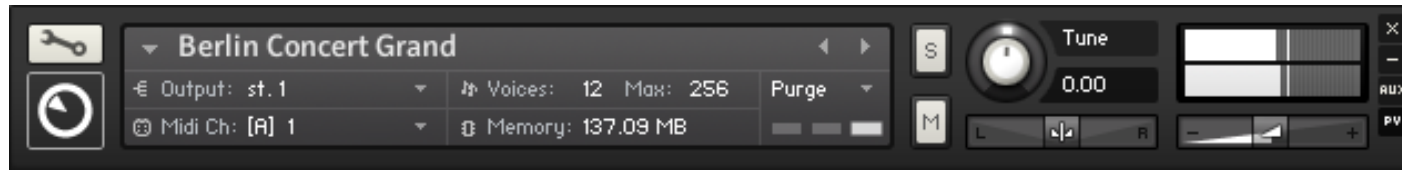
Famous Fingers: Claude Debussy, Franz Liszt, Elton John, David Bowie, Rick Wakeman, Supertramp and The Beatles

1.2 About KONTAKT / KONTAKT PLAYER

BERLIN CONCERT GRAND is an Instrument powered by KONTAKT; you will, therefore, have to have KONTAKT or the free KONTAKT PLAYER installed on your computer in order to use BERLIN CONCERT GRAND. Refer to the KONTAKT / KONTAKT PLAYER documentation, to learn how to load and configure KONTAKT Instruments.

2 Interface and Operation

This chapter will introduce you to BERLIN CONCERT GRAND specific controls, which are situated in the Performance View section of the Instrument within your KONTAKT / KONTAKT PLAYER software.



Instrument Header in KONTAKT

- Press the Performance View button (PV) in the lower right of the Instrument Header to show/hide the Performance View.

To learn how to operate the Instrument Header's controls, refer to the documentation of your KONTAKT / KONTAKT PLAYER software.

2.1 Basic Controls

There are five basic types of controls: knobs, buttons, drop-down menus, click menus, and numericals.

Knobs

- To change a knob value, click on it and drag up to move the knob clockwise, or down to move it counter-clockwise.
- Knobs can be fine-tuned by holding down your computer keyboard's [Shift] key as you move the knob.
- [Ctrl] + Click (Mac: [Cmd] + Click) resets a knob to its default value.

Buttons

These are all toggles – click once to turn on, again to turn off. The background of most buttons will change its color for the On and Off states.

Drop-Down Menus

These look like buttons, but have small arrows that point down. To access a drop-down menu's entries, click on the menu. A list holding several entries drops down. To select one of the entries, move the mouse to the regarding entry so that the entry gets highlighted, then release the mouse button. The piano takes whatever action you've requested, then closes the menu.

Click Menus

These work like scroll bar arrows in any computer program. Click the top arrow to access the previous setting. Click the bottom to access the next one (Click menus are only available in the Instrument Header).

Numericals

These are fields that contain numbers.

- ▶ Click on the numerical, then drag the mouse up to increase the value, and drag down to decrease the value.

or

- ▶ Double-click on the numerical, and type in the desired value.

Directly editable numericals are only available in the Instrument Header. The parameter values in the Performance View can be changed only by operating the accordant knob.

2.2 The Performance View

The Performance View holds all the relevant controls for shaping the sound of the piano.



Instrument Header with active Performance View

The controls are organized in six categories: Input, Resonance, Noise, Detail, Reverb, and Position.

2.2.1 Input

- **Tuning:** Here you can choose an alternative tuning for your piano. The most commonly used for piano are equal temperament and less so, stretch tuning. You'll find a complete list and description of these tunings in the Appendix of this document.

- **Velocity Curve:** Select from 7 different velocity curves. This affects how the piano responds to the incoming MIDI velocity. See more on Velocity in the Appendix.

2.2.2 Resonance

- **Sustain:** Sustain Resonance is a unique feature which controls the sustain sample resonance and release sample volume. When used in conjunction with a sustain pedal, Sustain gives an effect of spaciousness similar to that of reverb. It can be thought of as the tonal nuances created by the strings and body after the dampers are lifted.
- **Release:** Released keys also have a similar effect on undampened high notes, generating overtones. Release adjusts the intensity of the release samples and in turn, controls the overall presence of these tones.

2.2.3 Noise

- **Key:** adjusts the volume of the piano action as a key is released. 0 is very faint, while 100 is more present. The knobs middle position is the sound as originally recorded.
- **Pedal:** adjusts the volume of the pedal mechanism, thus creating a more realistic sound when using them. As with the Key Noise, the middle value is the original recorded sound.

2.2.4 Detail

- **Lid:** sets the lid position of the piano. The three positions are open, half-closed and closed.
- **Dynamic:** adjusts in dB the difference in dynamic between the lightest (minimum key velocity) and hardest (maximum key velocity) keystroke.

2.2.5 Reverb

- **Amount:** adjusts the reverb amount.
- **Location:** these impulse response-based convolution effects combine the realism of acoustic spaces with the flexibility and control possibilities of signal processing. Select one of the rooms to load a convolution preset:
 - **Cathedral:** very large room size, marble floor material.

- **Concert Hall:** large room size, parquet floor material.
- **Jazz Club:** middle room size, hardwood floor material.
- **Recording Studio:** small room size, linoleum floor material.

2.2.6 Position

- **Width:** sets the width of the stereo field.
- **Distance:** simulates distance from the piano to the reflective surface by adding pre-delay.

2.3 The Pedals

The piano has three pedals. The pedals can be engaged using standard MIDI control changes (CCs). The corresponding CC number is noted next to the pedal name.

Damper pedal (CC 64): The Damper Pedal is also called the Sustain Pedal. Every note on the piano, except the top two octaves, has a damper, which is a padded device that prevents the strings from vibrating. The damper is lifted off the strings whenever the key for that note is pressed. When the damper pedal is pressed, all the dampers on the piano are lifted at once, so that every note can “sustain.”

Una Corda (CC 67): Una Corda (literally means “one string” in Italian) or the soft pedal is placed left most in the row of pedals. On a grand piano, this pedal shifts the action to one side slightly, so that hammers that normally strike all three of the strings strike only one or two of them. This softens the note and also modifies its tone quality.

Sostentunto (CC 66): The Sostenuto Pedal or middle pedal maintains in the raised position any damper that was raised at the moment the pedal was depressed. It makes it possible to sustain some notes (depress the sostenuto pedal before releasing the notes to be sustained) while the player’s hands have moved on to play other notes. The sostenuto pedal was the last of the three pedals to be added to the standard piano, and to this day many cheap pianos don’t have one, but all grand pianos do. A number of twentieth-century works will require use of this pedal.

3 Tunings in BERLIN CONCERT GRAND

BERLIN CONCERT GRAND allows you to select from a variety of tunings, each of which is suited for a certain application. In the following you will be introduced to the tunings available:

3.1 Equal Temperament (Equal)

To accommodate both keyboard design and the need to be able to play in all keys so that everything sounds acceptable, the octave on the piano is mathematically divided into 12 equal parts. This process is called tempering. The specific type of tempering commonly used in piano tuning is called equal temperament. In Equal Temperament the ratio between half-steps is 100 cents. This is the preferred tuning when playing with other instruments.

3.2 Stretched Tuning

The term Stretched Tuning describes a tuning where the high and low registers of the piano are tuned higher and lower, respectively, tuning the low strings' harmonics with the upper strings' fundamentals. The piano is intentionally tuned out of Equal Temperament in order to be in tune with itself. While this tuning may be the best for solo work, it is commonly not used when working with other instruments.

3.3 Pure Tunings

3.3.1 Pure (Pure)

Note	Frequency Ratio	Deviation from Equal Tempered
C	1/1	0 cent
C#/Db	25/24	- 29.328 cent
D	9/8	+ 3.910 cent
D#/Eb	6/5	+ 15.641 cent
E	5/4	- 13.686 cent
F	4/3	- 1.955 cent
F#/Gb	25/18	- 31.283 cent
G	3/2	+ 1.955 cent
G#/Ab	8/5	+ 13.686 cent
A	5/3	- 15.641 cent
A#/Bb	9/5	+ 17.596 cent
B	15/8	- 11.731 cent
C	2/1	0 cent

3.3.2 Overtones 16-32 (Harmonic)

All intervals are taken from the fifth octave of the harmonic series (i.e. the scale is made up from the overtones 16 17 18 19 20 21 22 24 26 27 28 30 32):

Note	Frequency Ratio	Deviation from Equal Tempered
C	1/1	0 cent
C#/Db	17/16	+ 4.955 cent
D	9/8	+ 3.910 cent

D#/Eb	19/16	- 2.487 cent
E	5/4	- 13.686 cent
F	21/16	- 29.219 cent
F#/Gb	11/8	- 48.682 cent
G	3/2	+ 1.955 cent
G#/Ab	13/8	+ 40.528 cent
A	27/16	+ 5.865 cent
A#/Bb	7/4	- 31.174 cent
B	15/8	- 11.731 cent
C	2/1	0 cent

3.3.3 Pythagorean Tunings

Pythagorean tunings are based on pure fifths. Five pure fifths are tuned down and up from C, F#/Gb is deliberately set to ± 0 cent.

Note	frequency ratio	deviation from equal tempered
C	1/1	0 cent
Db	256/243	- 9.775 cent
D	9/8	+ 3.910 cent
Eb	32/27	- 5.865 cent
E	81/64	+ 7.820 cent
F	4/3	- 1.955 cent
F#/Gb	-	0 cent
G	3/2	+ 1.955 cent
Ab	128/81	- 7.820 cent

A	27/16	+ 5.865 cent
Bb	16/9	- 3.910 cent
B	243/128	+ 9.775 cent
C	2/1	0 cent

3.4 Meantone Temperaments

Classic mean tone temperament: the syntonic comma (sC) is divided into four equal parts, this fourth comma is subtracted from the pure fifth and constitutes the mean tone fifth. The fifths Eb-Bb-F-C-G-D-A-E are tuned as mean tone fifths, the thirds A-C#, D-F#, E-G# and G-B are tuned pure.

Note	frequency ratio	deviation from equal tempered
C	1/1	0 cent
C#	(135/128) / sC3	- 23.950 cent
D	(9/8) / sC2	- 6.843 cent
Eb	(32/27) / sC-3	+ 10.265 cent
E	5/4	- 13.686 cent
F	(4/3) / sC-1	+ 3.422 cent
F#	(45/32) / sC2	- 20.529 cent
G	(3/2) / sC1	-3.422 cent
G#	(5/4)2	- 27.372 cent
A	(27/16) / sC3	-10.265 cent
Bb	(16/9) / sC-2	+ 6.843 cent
B	(15/8) / sC1	- 17.108 cent
C	2/1	0 cent

3.5 Well Temperaments

- **Werckmeister III** (WerkIII): Temperament by Andreas Werckmeister (1645 - 1706), dating from 1691: the fifths C-G-D-A and B-F# are lowered by a quarter of the pythagorean comma.
- **Kirnberger III** (KirnIII): Temperament by Johann Philipp Kirnberger (1721 - 1783), dating from 1779. The fifths C-G-D-A-E are lowered by a quarter of the syntonic comma, the fifth F# - C# is lowered by the schism, the remaining fifths are pure.
- **Valotti** (Valoti): Temperament by Francesco Antonio Valotti, dating from 1754. The pythagorean comma is distributed over the fifths f-c-g-d-a-e-B; each of these fifths is lowered by 1/6 of the pythagorean comma.
- **Young** (Young): Temperament by Thomas Young from 1800, sometimes referred to as Young II. The pythagorean comma is distributed over the fifths c-g-d-a-e-h-f#; each of these fifths is lowered by 1/6 of the pythagorean comma

3.6 Quarter Tone (1/4 Tone)

A quarter tone is an interval half as wide (aurally, or logarithmically) as a semitone, which is half a whole tone.

In equal temperament the quarter tone is 50 cents or $2^{1/24}$ or 1.029302236643. In 24 tone equal temperament, or the quarter tone scale, it is the smallest step. In just intonation it is often 36:35 or 34:33.

This tunes all notes above and below the root, C, in quarter tones.

4 MIDI

4.1 MIDI CC Chart

The following MIDI channels are available for direct control of BERLIN CONCERT GRAND via an external MIDI controller:

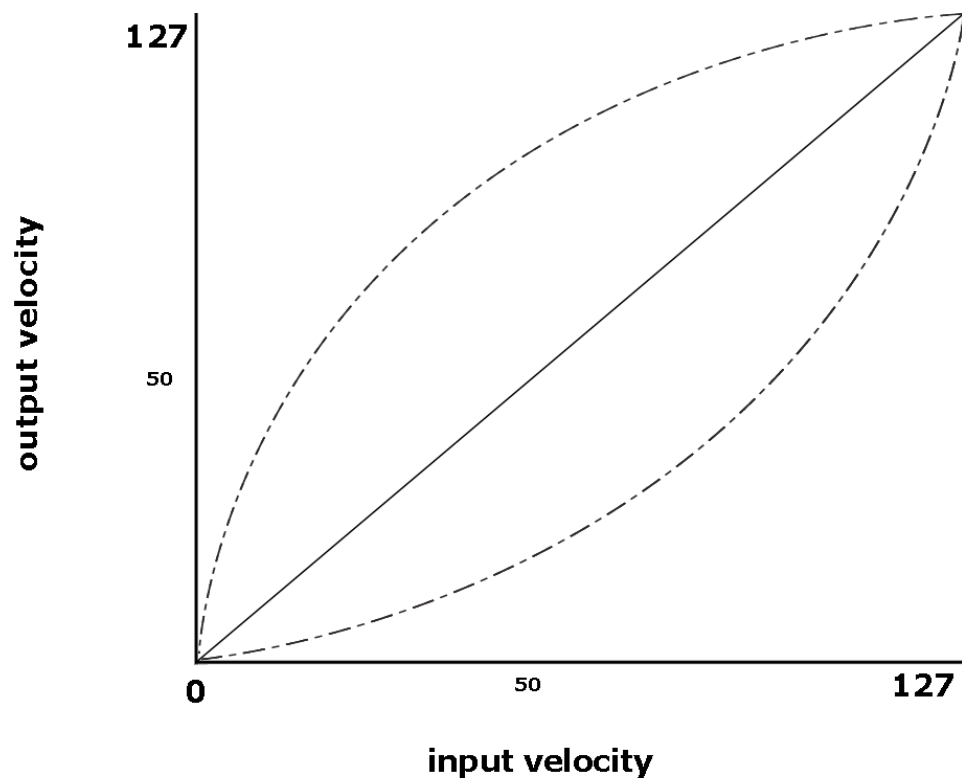
MIDI Channel	Control
CC 7	Volume
CC 10	Pan
CC 64	Sustain
CC 66	Sostenuto
CC 67	Una Corda

4.2 A note about MIDI Velocity

Not all MIDI keyboards transmit the entire MIDI velocity range while less expensive controllers may be stubborn about sending the values which you actually play. For example, pianissimo may generate a 30, and fortississimo may only transmit a 110. This may make it hard to achieve the desired expression that suits your playing style. The library offers a few techniques to overcome this problem. It is recommended that you first set up your keyboard response before setting the Dynamic.

The Velocity Curve setting offers you seven different slopes. The ranges are from -3 to +3, with a neutral curve in between. In general this means that with positive settings, the piano is more sensitive to softer incoming velocity. This could also be good if your keyboard tops

out at 100 for its max value, like some older models do. When the slope is negative, there is less response to softer velocity and more sensitivity to harder strokes. If pianissimo generates velocities around 40, then you should use negative slopes.



This picture illustrates how a -2 curve will scale an input velocity of 50 will result in an output velocity of about 20. With a +2 curve, an input velocity of 100 will yield an output of around 123.

While this type of setting is remains individual, we cannot say for certain which you might need. It is best to try out different settings and see which one works best with your setup.

When used in conjunction with Dynamic you can also control the piano's dynamic range in response to MIDI velocity. Any note played with a velocity below the curve's lowest velocity will play at the minimum of the dynamic range. Similarly, any note with a velocity above the curve's highest velocity setting will play at the maximum of the dynamic range setting. The Dynamic function can also modify the dynamics of the whole instrument track (increase or reduce the difference between loud and soft note velocity), without compression or adjusting the sequencer's note velocities.

5 Appendix

5.1 Troubleshooting

If you encounter any problems with crackles or dropouts, please try the following steps in the same order as listed below.

- Set the volume of the Sustain Resonance to 0.
- Read the KONTAKT / KONTAKT PLAYER documentation for information on latencies.
- If you still experience crackles, this might be disk related. If you are using a laptop, try moving the library to an external hard disk connected via USB 2 or FireWire.