NEOTONE®

Owner's Manual

version 2.7

What is NEOTONE?

Neotone is the world's first stage-ready, standalone digital handpan as well as ergonomic MIDI keyboard. This digital instrument is capable of playing most of the tones like acoustic instruments, such as open and closed sounds, overtones, and slap sounds.

Instrument tonefields

The instrument is divided to 11 independent tonefields, each section senses the position and strength of a hit or a hold, even when it’s done simultaenously. The sensors are very precise with a large dynamic range and they easily detect from very light touches to hard ones.

Instrument body

The instrument is made by wood so the whole surface hit sensitive and is virtually divided into 9 top and 9 bottom hit areas.

Select a scale

You can switch between instrument scales by holding the dome and one of the side tonefields at the same time for 2 seconds. By default, Neotone has 6 scales, however the instrument will automatically download new scales if connected to WiFi.

Interface

You can configure any settings by using the online interface of the instrument, using WiFi connection. The interface has many settings, for example adjusting the sensitivity / curve of the tonefields and the body, noise thresholds, configuring midi maps, assigning panel knobs / pedal jacks to any instrument setting.

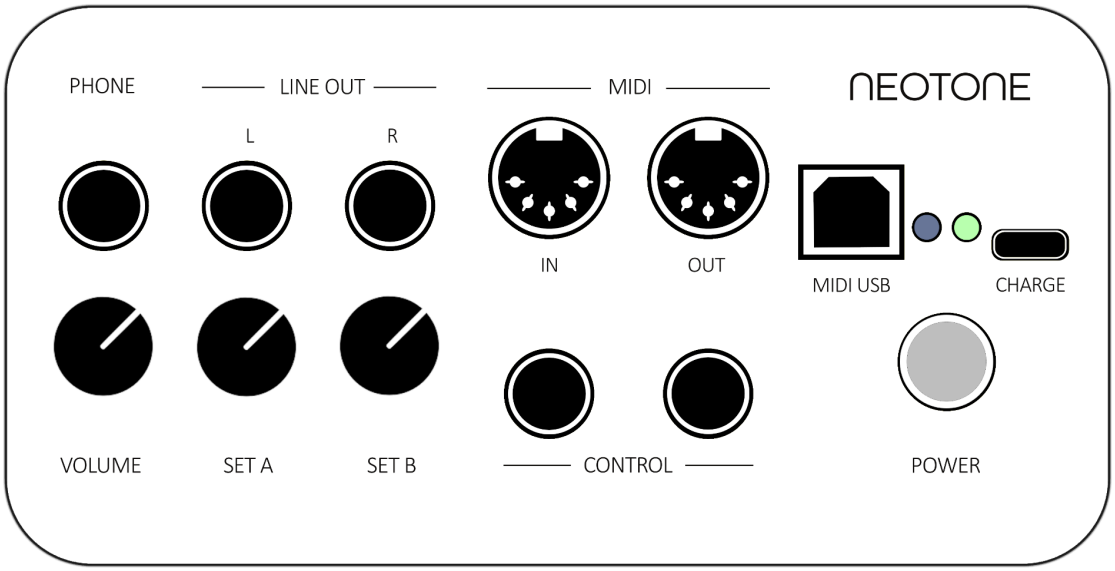
As a MIDI keyboard

If you want to use the instrument as an ergonomic midi keyboard you need to connect it to another midi device or computer. You can define multiple midi maps, assigning each tonefield / body section to a different midi note. Each tonefield is adjustable to send / receive midi notes you can choose to play the audio (or not) at the same time.

Record the audio

Just hold the dome for 3 seconds to start the recording (it needs WiFi connection). Stop the recording the same way. You can play the recorded audio on the interface, or you can download it or share it.

Switch on/off, charging



Switch on

by pressing the POWER button on the panel at the bottom. It needs approx. 15 seconds to boot the instrument, during this time it's not possible to switch it off.

Switch off

by holding the POWER button for 3 seconds. The RED light next to the POWER button will start blinking, the whole shutdown process takes about half a minute, when the light completely fades. It's not possible to switch it back on during the shutdown process.

The shutdown process may take more time if the instrument is updating the software or the downloading scales (the bottom RED light will be blinking until it's finished). If you don't want to wait for the update / download you can hold the POWER button again which will force the instrument to shutdown and it will try to continue the update / download at next switch off.

Charging

The instrument comes with a USB C-Type charger and cable. It takes about 8 hours to fully charge the battery. Then it can operate, without the charger connected, for about 8 hours. You can use the instrument while it's being charged.

Quick tips

Auto calibration

When you switch on the instrument it first calibrates all the tonefield sensors and loads the scale that was last used. During this time it's not recommended to touch the tonefields and the instrument should be kept horizontally. If the calibration is not 100% it may play different tones on some tonefields, for example a closed sound instead of an open one. In this case just turn the instrument quickly to a vertical position and back to recalibrate the tonefields.

Disrupting sounds

If a mobile phone is near the instrument it may interfere with the sensors causing it to play unexpected tones. So it's not recommended to have a mobile phone nearby, for example in your pocket while playing the instrument on your lap.

Charging the instrument

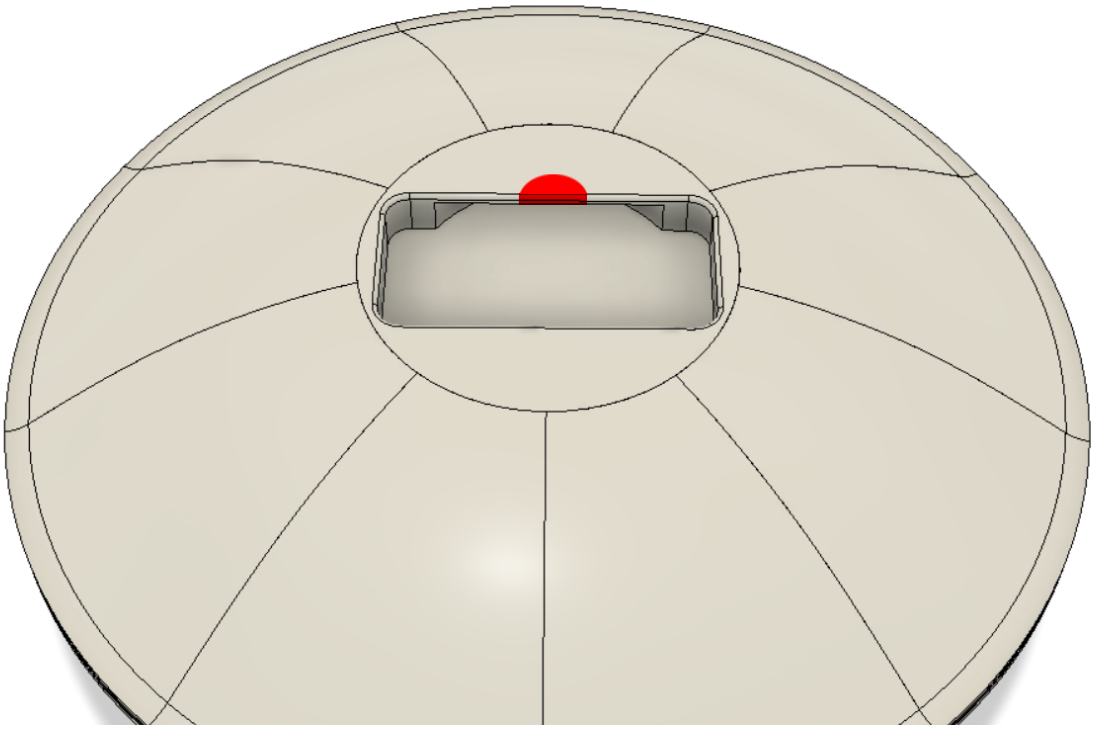
It's recommended to use the USB C-Type charger included in the package. You can charge the instrument while playing, however the sensors perform best and is most accurate when the charger is not connected.

Hotkeys

Select scale	Hold DOME and a side tonefield simultaneously for 2 seconds
Select midi set	Hold DING and a side tonefield simultaneously for 2 seconds
Start/stop recording	Hold DOME for 3 seconds

Upside down in its case

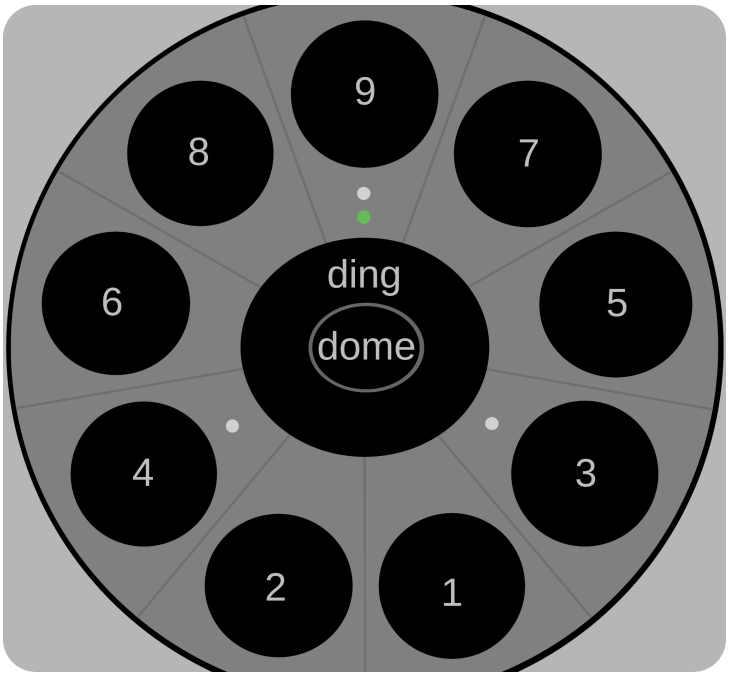
The instrument is placed upside down on its case, grasping the marked area. There is a soft ring inside the case to protect upper side of the instrument.



Tonefields and body

Tonefields

The instrument has 11 different tonefields. The numbers represent an ascending order of music notes. There are two center tonefields called DING and DOME, giving the deepest note frequency on any active scale. The numbers (from 1 to 9) represent the deepest to highest notes on the side tonefields. This is the default configuration, it can be changed on the interface.



There are 4 inlay markers on the body of the instrument, for orientation. The double marker points to the highest note. The two other markers point to note #3 and #4. It's easy to find the highest note as the double marker has an indicator light built in.

Each tonefield has a very precise and sensitive sensor system to measure the velocity and position of a hit. It allows you to play overtones, closed sounds, or mutes. The tonality of a sound depends on where you hit the tonefield. There are 4 key points on a tonefield where the difference in the tonalities are most significant: the center, vertical shoulder, horizontal shoulder, and between the center and shoulder.

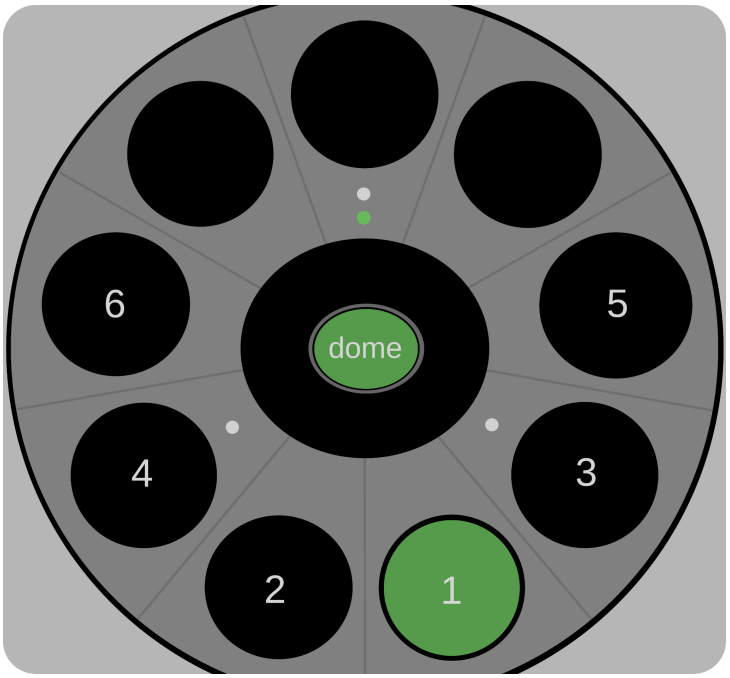
Each scale has more than 1300 unique recorded audio samples give you the closest experience to an acoustic instrument. Furthermore each hit mixes multiple samples, depending on its position and velocity, so practically every hit will sound slightly different.

The dynamic range of tonefield sensors is significant. You can adjust this range on the interface (Velocity hardness). The whole instrument (the body and the tonefields) is very durable so you can hit it hard (only by hand, obviously) without having to worry about damaging it.

Body

The whole body of the instrument is made of wood and is hit sensitive. It can sense the position of a hit, and play different tones working towards the top or bottom or going round in a circle. The sensors on the body are slightly less sensitive than the tonefields, and you cannot mute a sound on the body.
This is the default configuration, you can change it on the interface.

Select a scale



You can switch between instrument scales by holding down the DOME and one of the side tonefields simultaneously for 2 seconds. You can choose 6 scales by default:

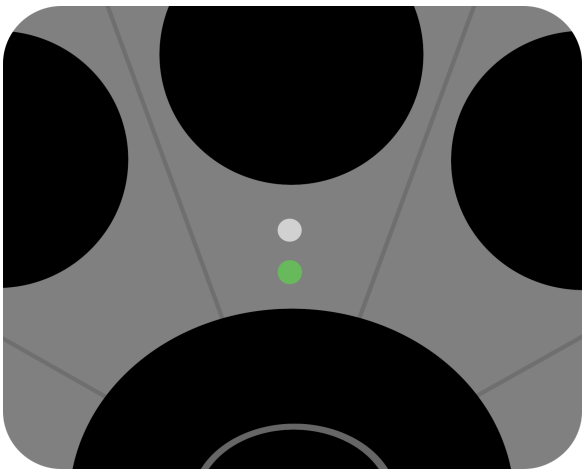
DOME+1: B Amara	B2 F#3 A3 B3 C#4 D4 E4 F#4 A4 B4
DOME+2: C Aegean	C3 E3 G3 B3 C4 E4 F#4 G4 B4 E5
DOME+3: C# Pygmy	C#3 F#3 G#3 A3 C#4 E4 F#4 G#4 A4 C#5
DOME+4: D Kurd	D3 A3 Bb3 C4 D4 E4 F4 G4 A4 C5
DOME+5: F# Pygmy	F#2 C#3 F#3 G#3 A3 C#4 E4 F#4 G#4 A4
DOME+6: G Romanian Hijaz	G3 C4 D4 D#4 F#4 G4 A4 A#4 C5 D5

For example, to switch to scale B Amara, hold down the DOME and tonefield #1 simultaneously for 2 seconds. After 2 seconds the light will turn ORANGE which means that the scale is loading. During this time the instrument is muted. After a scale is loaded the front light will turn GREEN (or RED if it needs charging), and the instrument will play a note to indicate that it is ready.

The instrument will load the scale that was last selected when switched on.

Front indicator light

The front indicator light shows the current status of the instrument.



NO LIGHT	Instrument switched off*
GREEN	Ready to play
GREEN / **FLASHING RED**	Ready to play, battery below 20% (~1.5 hours left)
RED	Recording
ORANGE	Loading scale / Updating

*Note: when switching on or off the instrument, it needs approx. 15 seconds to boot up or shut down. During this time the light is not on or off yet.

Connect to a WiFi hotspot

Connect the instrument to a WiFi hotspot

You need to connect the instrument to a WiFi hotspot if you like to use the interface. You can do it by several ways:

Connect to WiFi by WPS push button

1, Switch on the instrument by pressing the power button. Wait for about 30 seconds, until the front indicator light color will be GREEN.

2, Press shortly the power button three times, the front indicator light color will be ORANGE.

3, Press the WPS button on your WiFi router to establish a connection. Depending on the router and the home configuration, it may take a 1-2 minutes to connect. If you share a hotspot via smartphone, just tap the “WPS button” (Only available for android devices, iPhone does not support WPS)

4, Check the connection, navigate to digitalhandpan.com/setup for login to the interface. If the GREEN indicator icon is visible on the interface, then the instrument is successfully connected to the interface via WiFi.

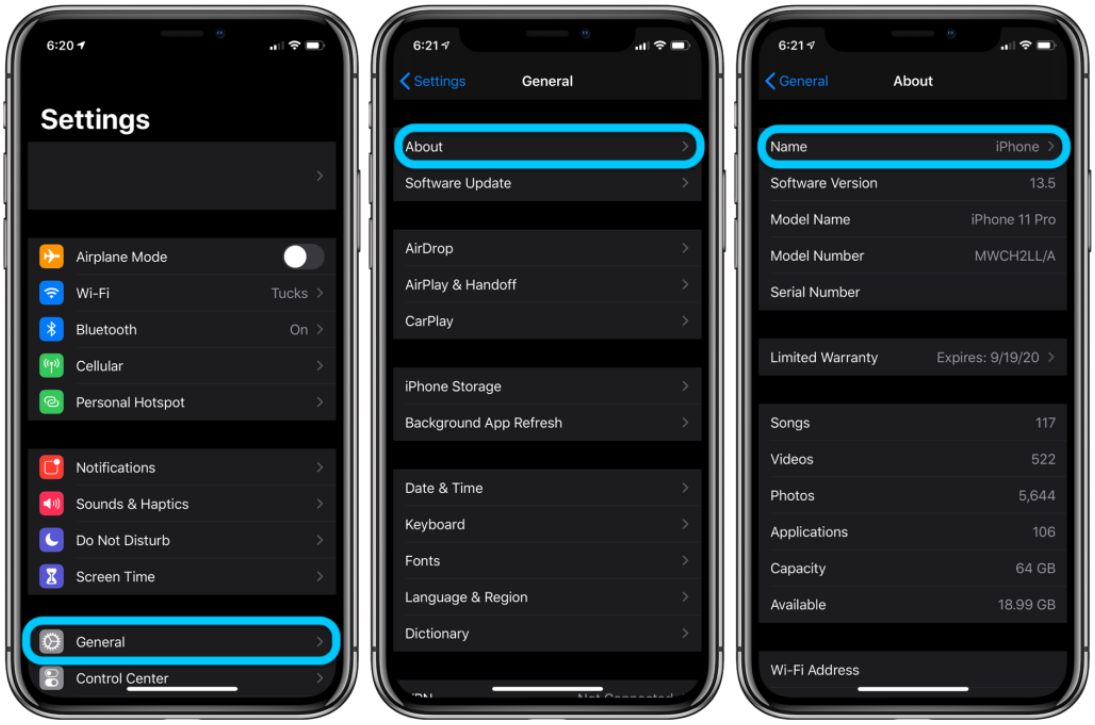
Connect to WiFi by set up a hotspot on your smartphone

1, Switch on the instrument by pressing the power button. Wait for about 30 seconds, until the front indicator light color will be GREEN.

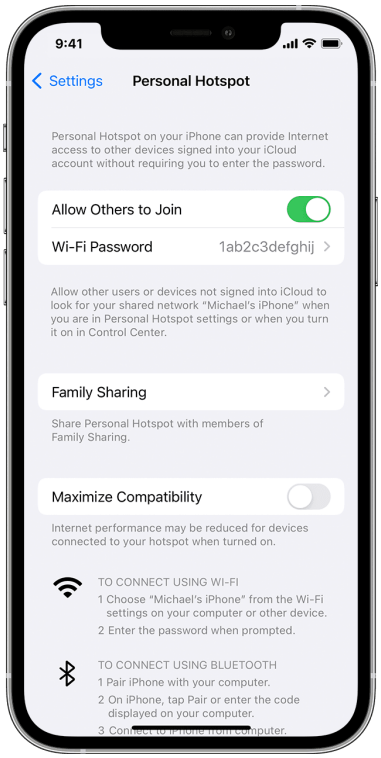
2A, **Android:** Navigate to Settings > Wireless & networks >Tethering & portable hotspot > Portable Wi-Fi hotspot. Choose Configure Wi-Fi hotspot to set the name “**Neotone**”, and password “**digitalhandpan**”, then tap Save.

2B, **iPhone:**

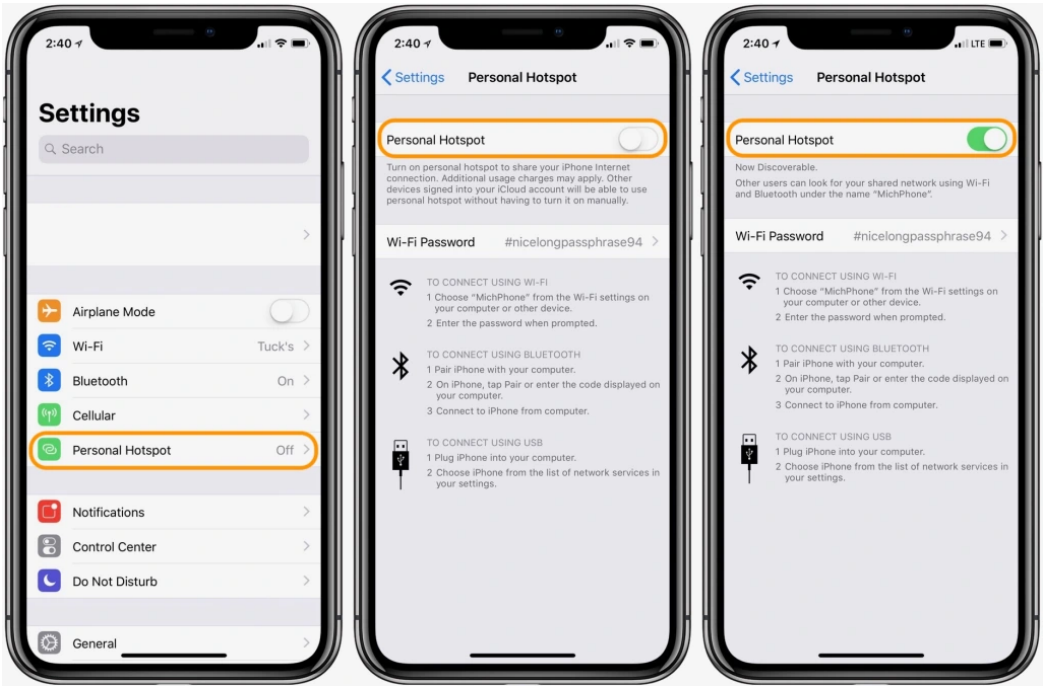
- Navigate General > About > Name, enter the name “**Neotone**” then tap Done.



- Navigate Settings > Cellular > Personal Hotspot or Settings > Personal Hotspot, enable “Allow Others to Join”, Then set the Wi-Fi password to “**digitalhandpan**”



- older iOS versions: Navigate Settings > Personal Hotspot, and make sure the Personal Hotspot is on. Then set the Wi-Fi password to “**digitalhandpan**”



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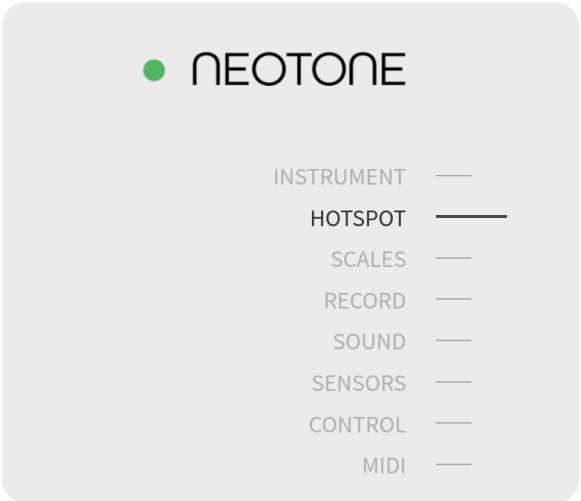


Login to Interface

The very first time to login

1, Just click on the link (digitalhandpan.com/setup) you receive in the registration email to log in the interface.

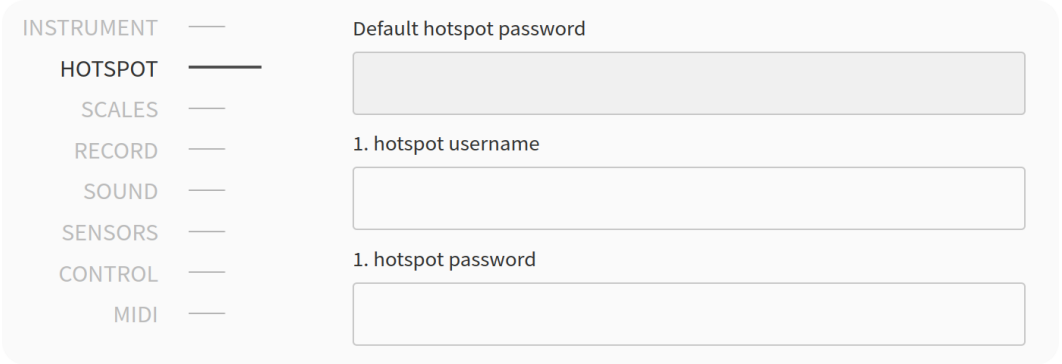
2, Select **HOTSPOT**

3, Set up a WiFi hotspot on your mobile phone and configure it using the default hotspot username and password.

4, Switch off the instrument then turn it back on, and wait for about 30 seconds. A GREEN indicator icon will appear which means the instrument is connected to the interface.

Optional: Adding your own WiFi hotspots

If you already have WiFi hotspot at home, just enter login details to **HOTSPOT.** You can add 2 different WiFi hotspots, the instrument will automatically connect to the one available. If there aren't any additional hotspots, the instrument will try to connect to the default one.

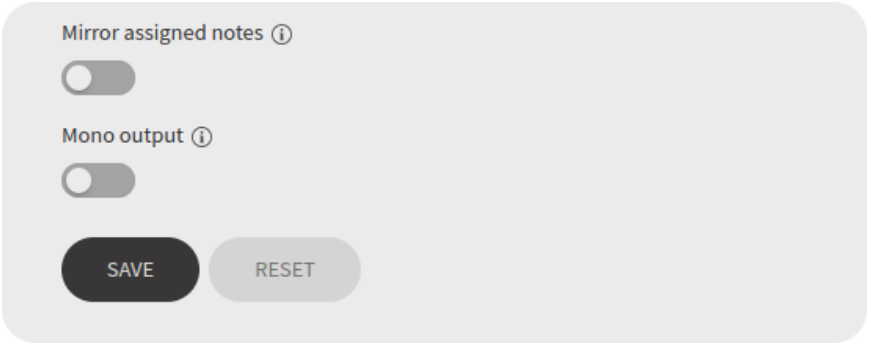


Using the Interface

Status indicator

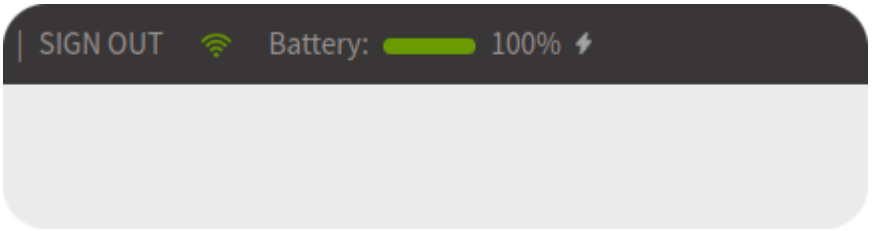
The interface always shows what status the instrument is in. The GREEN icon means the instrument is switched on and connected to the interface. The ORANGE icon means that the instrument is in power save mode (hit the dome to wake it). If there is no icon shown, the instrument is switched off or could not connect to WiFi.

Change settings on interface



You can change the settings even when the instrument is switched off. Press the **SAVE** button to apply the modified settings, or press the **RESET** button to apply factory default settings. A loading icon will appear when the new setting is being processed. If there is no WiFi network available the instrument will continue to use the configuration last saved.

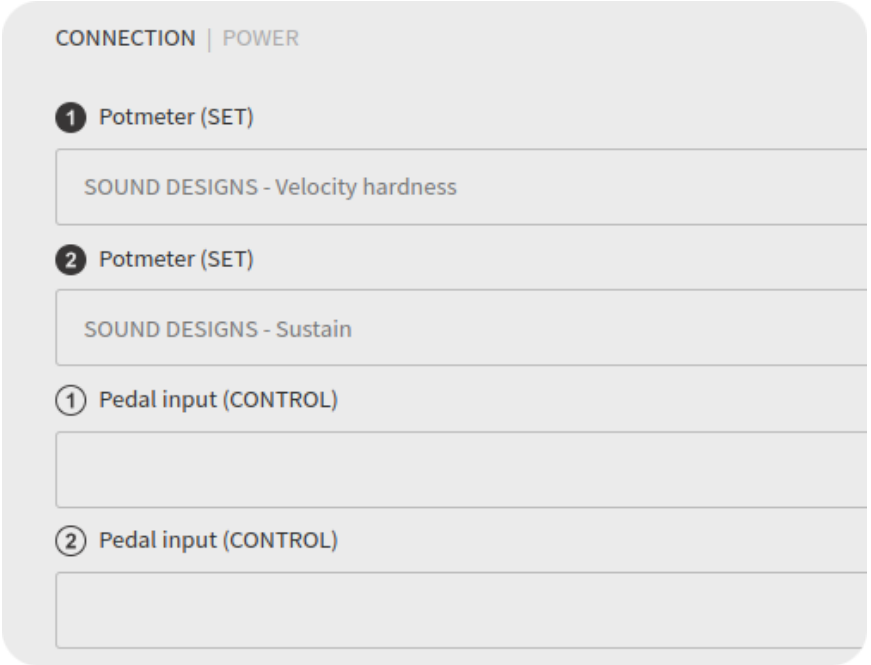
WiFi and Battery indicator



WiFi indicator shows the network's strength.

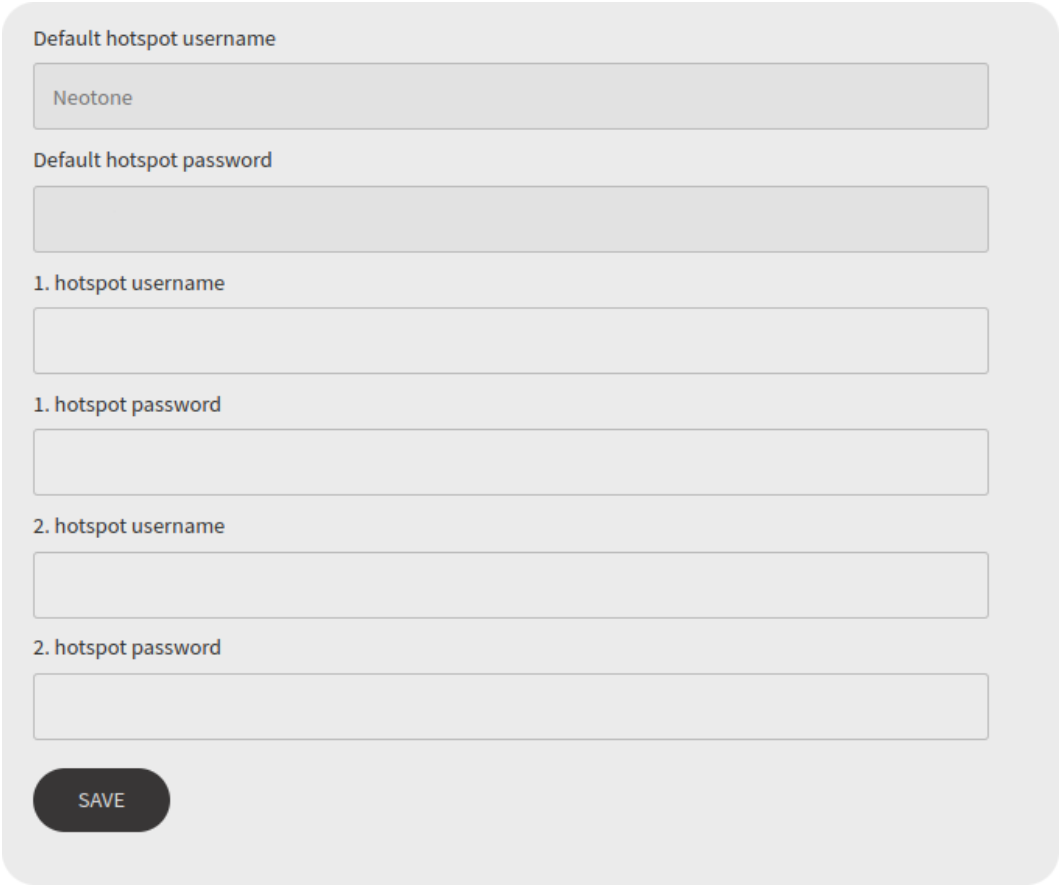
Battery indicator shows the charge level of the battery when the instrument is switched on and connected to WiFi. The battery bar is green if it is above 20%, and red if below 20% (~ 1.5 hour left). If a message appears: “Slow charging detected”, disconnect and then reconnect the USB charger.

Connecting sliders to knobs / foot pedals



Most of the sliders and switches can be paired up with a back panel knob or foot pedal. This function allows you to change any settings on the interface by physically making adjustments on the instrument (no WiFi connection needed). For example, if you have paired up KNOB 1 with the volume slider, even when the instrument is not connected to WiFi, you can adjust the volume by physically turning KNOB 1.

HOTSPOT (Interface)



This section has all the hotspot login information. The default hotspot helps you to connect to the interface for the very first time by using WiFi. You can also add another 2 hotspots.

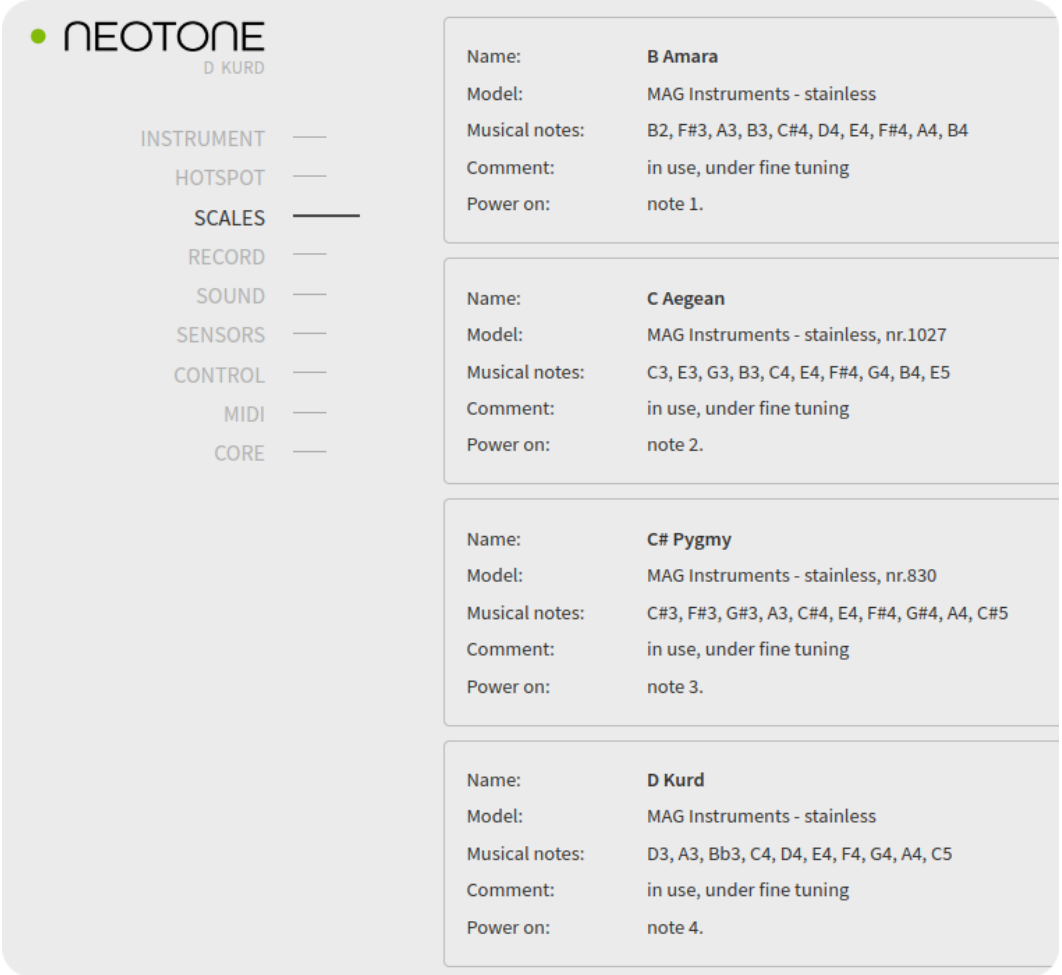
If there are more hotspots available at the same time, the instrument will automatically connect to a hotspot by the following order:

> 1. hotspot
> 2. hotspot
> default hotspot

If you add a new hotspot while the instrument is switched on, it will take some time to connect to it. If it doesn't connect, try switching it off and on.

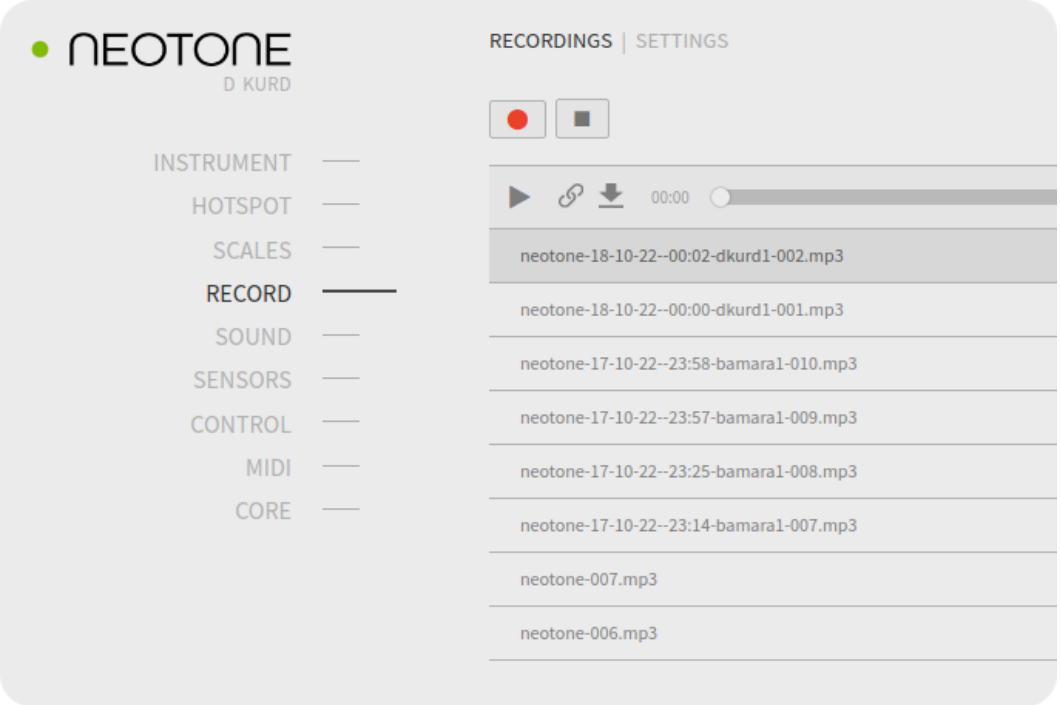
The instrument can fully operate without having to connect to any hotspots, however the interface provides you with different ways to configure the instrument.

SCALE (Interface)



This section lists all the available scales you can select from.
To select a scale, hold down the DOME and a tonefield simultaeonusly for 2 seconds.

RECORDING (Interface)



Hold down the DOME for 3 seconds to start or stop a recording. Once you have finished a recording, its track will appear on the list. (WiFi connection required)

TRACKS

Here you can manage your recordings.

PLAY
SHARE
DOWNLOAD
DELETE

SETTINGS

Save to instrument

ON Recording saved on the instrument even if not connected to WiFi.
OFF Recording is online streaming (needs WiFi)

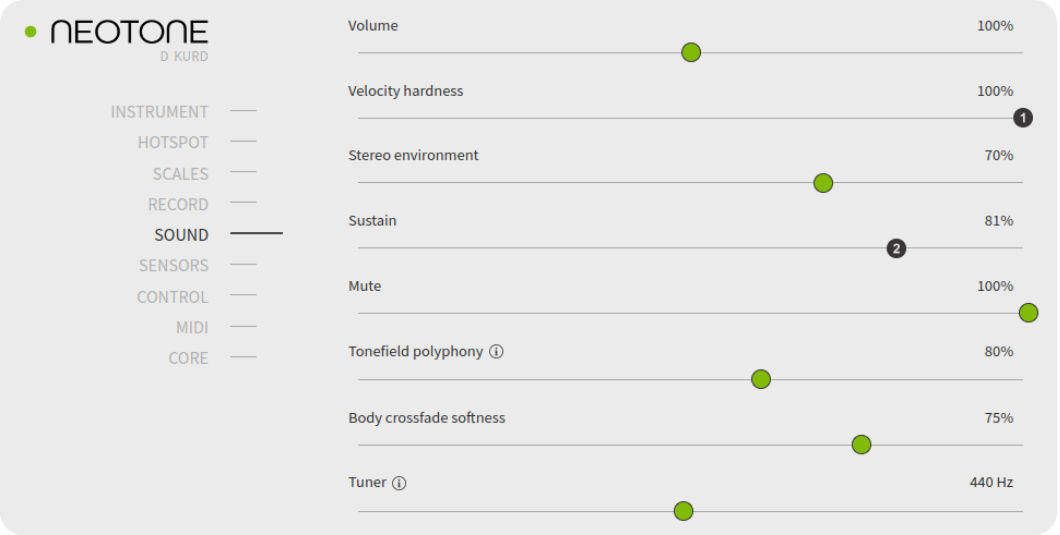
MP3 compression

ON Recording is automatically compressed to MP3
OFF Recording is stored as WAV

MP3 quality

The bitrate can be set between 128 to 320 kbps

SOUND (Interface)



Volume

Adjust the master volume (0 - 200%)

It may cause sound distortion if going above 100%..

Velocity hardness (paired with knob “SET A” by default)

Stereo environment

Adjust the stereo width. 70% is ideal for headphones, 100% for loudspeakers.

Sustain (paired with knob “SET B” by default)

Adjust the sustain.

Mute

Set the mute sensitivity. 100% being the most sensitive, and closest to sounding like its acoustic instrument version. If setting the value lower, it will need stronger pressure on the tonefields to mute a sound.

Tonefield polyphony

Adjusting the density of a tone when hitting the same tonefield repeatedly.

Body tone crossfade

You can adjust the softness of crossfading two adjacent body tones. 0% being the hardest, which means that if hit will play the nearest body tone without mixing with other tones.

Tuner

The default setting is 440 Hz. If you modify it, the system will load the scale you are using at the moment.

Force mute

Forcing play mute sounds. It is recommended to pair it with a foot pedal.

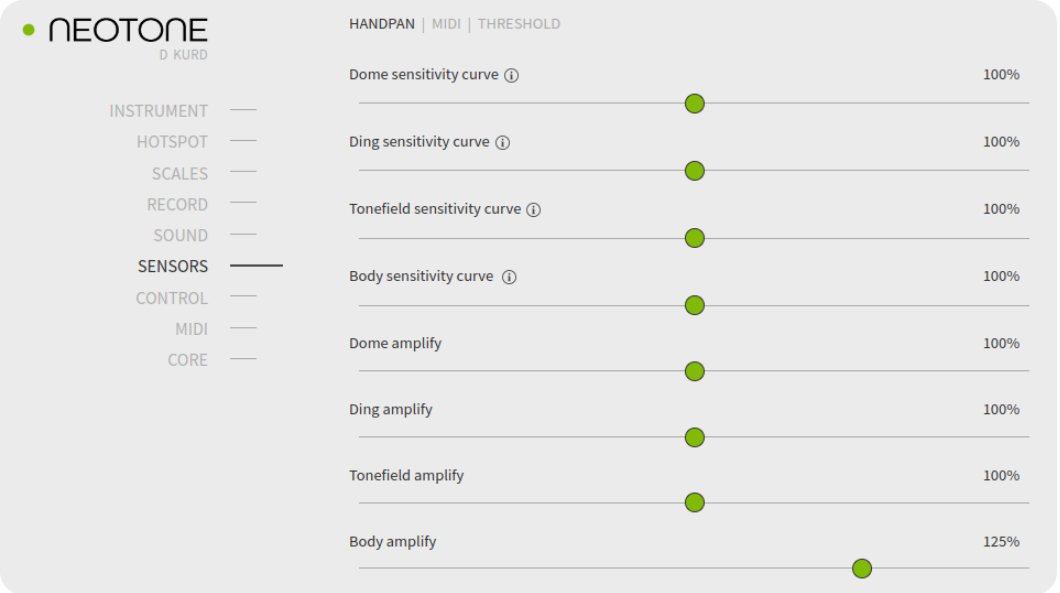
Mirror assigned notes

The lowest side note is on the right side by default. When it switched on, it will be on the left side.

Mono output

When it is switched on, it will convert stereo to mono for line out and headphones as well.

SENSORS (Interface)



HANDPAN

You can adjust the **sensitivity curves** (dynamic characteristic) of tonefields and the body tones.

You can adjust the **amplify** (gain) of tonefields and the body tones.

Body sensors enabled is switched on by default. The instrument will be muting the body tones when it is switched off.

MIDI

You can adjust the **sensitivity curves** (dynamic characteristic) of tonefields and the body tones for the MIDI.

You can adjust the **amplify** (gain) of tonefields and the body tones for the MIDI.

Body sensors enabled is switched on by default. The instrument will not sending body midi notes when it is switched off.

The foot pedal connectors working as expression pedal mode by default.
When **trigger pedal** is switched on, the pedal connectors working as kick trigger.

THRESHOLD

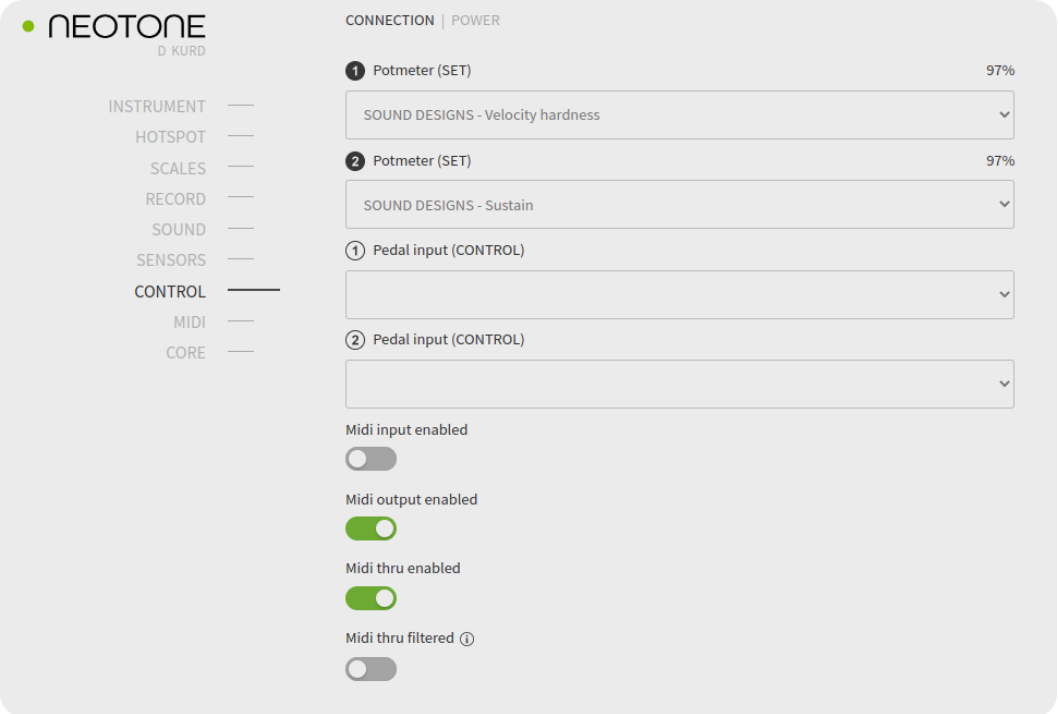
Noise threshold for tonefields default is 50%. It's recommended to increase this value if you using a handpan stand, or if you play strongly on the body. You can decrease this value if you play softly on the instrument.

Noise threshold for body default is 20%. It's recommended to increase this value if you using a handpan stand, or if you play strongly on the instrument. You can decrease this value if you need extra sensitivity for the body. It may cause crosstalk between the body and tonefields when this value below 20%.

Noise threshold for trigger PEDAL 1 set noise threshold for kick trigger pedal 1

Noise threshold for trigger PEDAL 2 set noise threshold for kick trigger pedal 2

CONTROL (Interface)



Most of the sliders and switches can be paired up with a back panel knob or foot pedal. This function allows you to change any settings on the interface by physically making adjustments on the instrument (no WiFi connection needed). For example, if you have paired up KNOB 1 with the volume slider, even when the instrument is not connected to WiFi, you can adjust the volume by physically turning KNOB 1.

CONNECTION

Most of the sliders and switches can be paired up with a back panel knob or foot pedal. You can select a parameter which you like to paired up to a knob or foot pedal. You can select the empty option if you don’t like pairing a knob none of the parameters, in this case when you turning the knob, it has no effect.

Midi input enabled Enable midi input messages when it is switched on.

Midi output enabled Enable midi output messages when it is switched on.

Midi thru enabled Send input messages to the output when it is switched on.

Midi thru filtered Filter midi output messages by channels (set instrument channels at **MIDI** menu) when it is switched on.

POWER

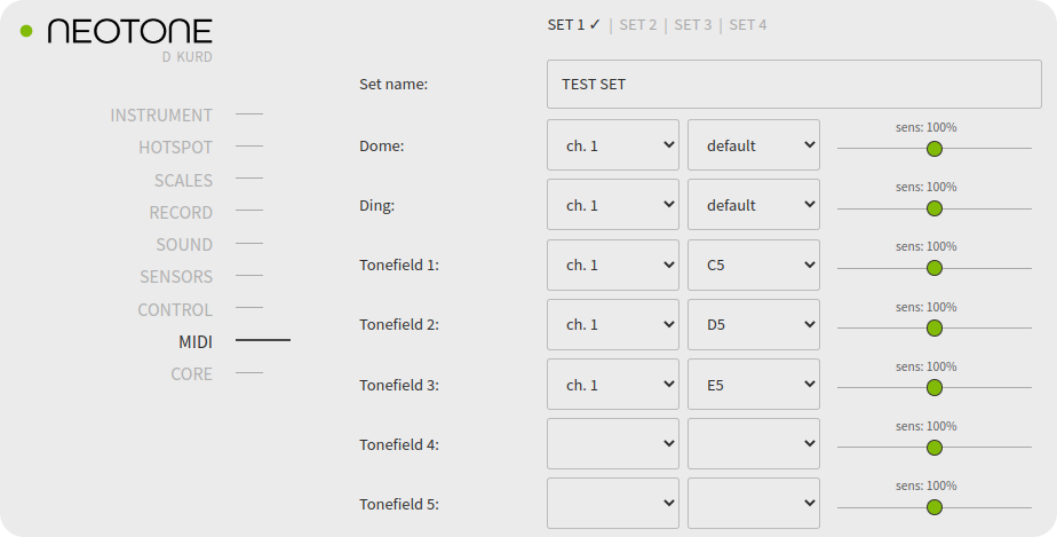
Shutdown time on battery mode Set auto switch off duration when the battery charger is not connected.

Shutdown time when plugged Set auto switch off duration when the battery charger is connected.

Sleep sensors time Set the duration after the sensors switches to sleep mode to reduce battery consumption. This status indicated on the interface by ORANGE icon. You need to hit the DOME to wake up the instrument from sleep mode.

Sleep DAC time Set the duration after the DAC and headphone amplifiers switches to sleep mode, to reduce battery consumption. It is switches on automatically when its needed.

MIDI (Interface)



This section has midi maps for configuring midi messages. In order to define midi maps you can click on **SET 1 - 9**. You can choose a midi set on the instrument by holding down the DING and tonefield #1 simultaneously for 2 seconds. For example, hold down the DING and tonefield #3 to select midi set 3.

Once you have saved the last available midi map, the next one will appear right next to it. You can name each midi map.

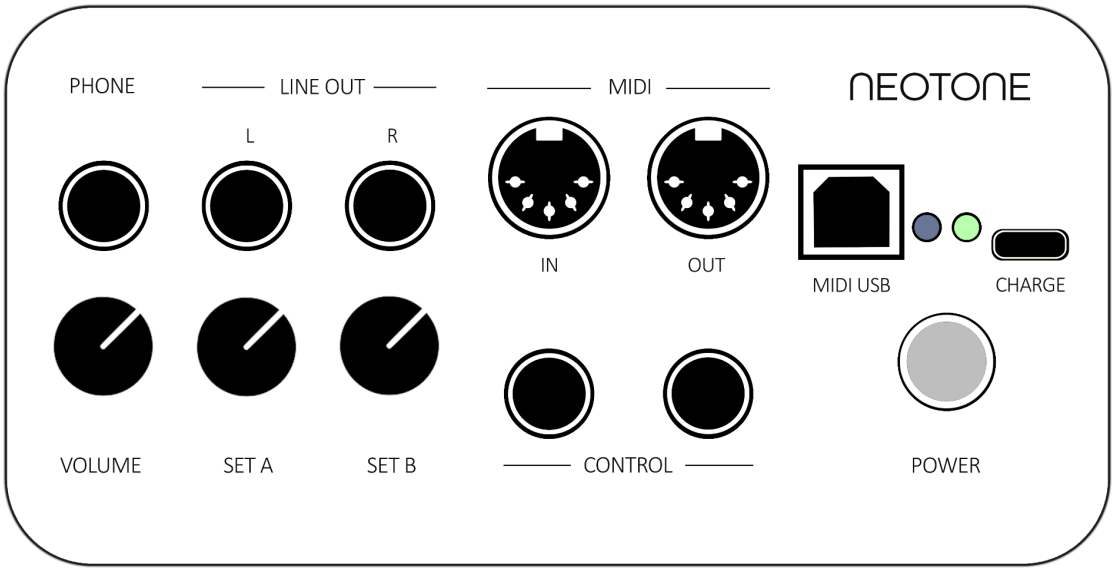
All fields' initial setting is empty which means the instrument won't send any midi messages. You can enable a tonefield to send midi notes by setting its note field to "default note". When "default note" is selected, the instrument will send out a corresponding midi note for the given active scale.

You can also fix a midi note for each tonefield. It is recommended when you prefer using the same midi notes for all the scales.

Note off inversion

Enables keyboard style (send midi OFF event when you release a tonefield)

Bottom panel and controls



POWER	Press the button to switching on the instrument Hold down for 3 seconds to switching off the instrument
CHARGE	Connect the USB C-Type charger to charge the battery
PHONE	Connect headphones (1/4“ TRS)
VOLUME	Adjust the headphones volume
LINE OUT	Unbalanced line outputs
MIDI IN / OUT	Connect an external MIDI device here
MIDI USB	Connect an external MIDI device through USB cable
SET A	Velocity hardness by default* (User specified controller)
SET B	Sustain by default* (User specified controller)
CONTROL	Connect an external kick trigger or volume pedals
BLUE LIGHT	Charger connected (it may need some time to recognize) Blinking BLUE when charging error / exhausted battery
GREEN LIGHT	Instrument is switched on and battery charge above 20%
RED LIGHT	Instrument is switched on and battery charge below 20% Blinking RED while downloading the updates (when switching off)

Included Accessories

- Owner’s Manual
- USB C-Type adapter and cable for charging
- Hard case for carry
- Soft bag

Technical specifications

- Operational temperature: 0 - 40`C
- Weight: 3.5 kg
- Dimensions: 47 cm diamater, 16 cm height
- Battery discharge: 8 hrs
- Full charge: 8 hrs
- USB maximum charge rate: 3000mA / 5V
- Sensors weight precision: < 1 gr.
- Sensors position accuracy: < 1 cm
- Audio latency: 5ms
- DAC: 24bit 384kHz 2.1Vrms SNR: 112dB THD: -93 dB

Troubleshooting

No sound at all

- Is a headphones or a loudspeaker connected to the instrument?
- When front light is ORANGE, the instrument loading or updating a scale. During this time sound is muted.
- When no light, the instrument is switched off.
- The instrument in power save mode, hit the DOME to wake up.

The instrument does not turn on

- The battery is exhausted, connect the USB C-Type charger.

The instrument does not turn off

- The instrument needs about 30 seconds to completely switched off. The instrument check the software and scale updates when going to switch off, this indicated by blinking RED and GREEN light on the back panel. It will switched off automatically when its done.

The instrument is automatically turned off

- It is a normal behaviour, if you not using the instrument for a while. (Duration adjustable on the interface)

Sounds triggered frequently without reason

- The trigger may be due to interference caused by the use of a mobile phone in close proximity to the instrument. Turn off the mobile phone, or use it further away from the instrument.

The overall volume is low, or no sound is heard

- The volume knob turned to low position or low volume setting at the interface.

Noise can be heard coming from the speaker / headphones

- The noise may be due to interference caused by USB midi cable. Use 5-pin midi cable.

Play muted tones without holding down the tonefield

- This caused by calibration error. In this case just turn the instrument quickly to a vertical position and back to recalibrate the tonefields.

Slow charging detected (interface message)

- Disconnect and then reconnect the USB charger.

The instrument can’t connect to WiFi hotspot

- Check the interface hotspot configuration match to hotspot name / password.
- The instrument have to switched on.
- Check the signal strength your WiFi hotspot.
- Try switching off the instrument and back on again.

The battery indicator decreasing even if charger plugged

- Disconnect the USB charger and reconnect again. It is recommended to use the USB C-Type battery charger accessory.

Scale selection doesn’t working

- Important to hold down the DING and a tonefield simultaneously, without touching other tonefields
- May caused by calibration error. Just turn the instrument quickly to a vertical position and back to recalibrate the tonefields.
- Try switching off the instrument and back on again.