

KASTLE 2 / CITADEL CALIBRATION

Kastle 2 / Citadel has two “precise inputs”, labeled Free and Note/Step. These can be calibrated so that they correctly react to V/Oct signals according to your source.

By default, the Kastle 2 comes with an average calibration and each Citadel unit is factory calibrated. However, you can match them precisely with your source of volt per octave signal with the following calibration routine.

Voltage Range for the precise inputs (NOTE/STEP and FREE)

Kastle 2: 0–4.5 Volts when powered by USB

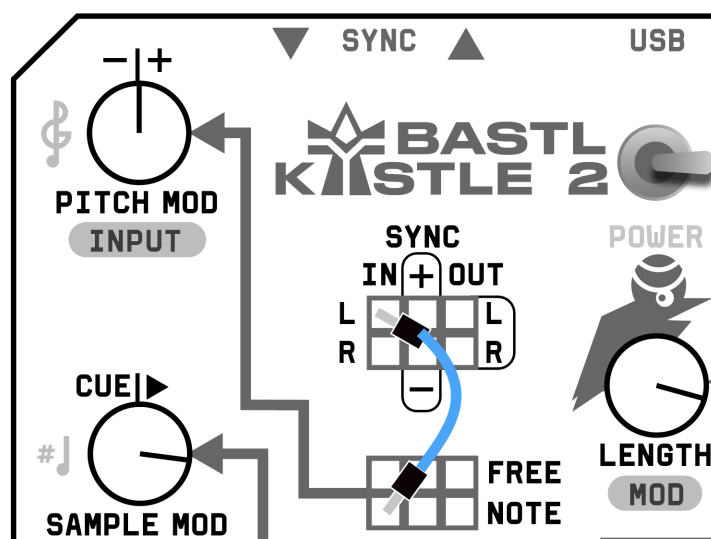
0–3 or 4 Volts on AA batteries (maximum voltage depends on how charged the batteries are and if they are rechargeable or alkaline)

Citadel: 0– 7 Volts

Preparation (Kastle 2)

- Download the special calibration firmware from here: [Download](#)
- Load the firmware onto your Kastle 2 using USB:
 - Connect the Kastle 2 to your computer with a USB C cable
 - Turn the Kastle 2 OFF
 - Hold the SHIFT button and turn the Kastle 2 ON
 - Copy the calibration firmware file *.uf2 to the mass storage device on your computer named RPI-RP2
 - Wait for the device to self-eject from the computer (ignore the warning message)
- Connect your V/Oct source output to the SYNC IN jack.
- Patch “SYNC IN - L” to the PITCH MOD NOTE input using a short patch wire.

- Plug your headphones into the Kastle 2 audio output to listen to the instructions.
- **Important:** Power the Kastle 2 from USB for best calibration results.



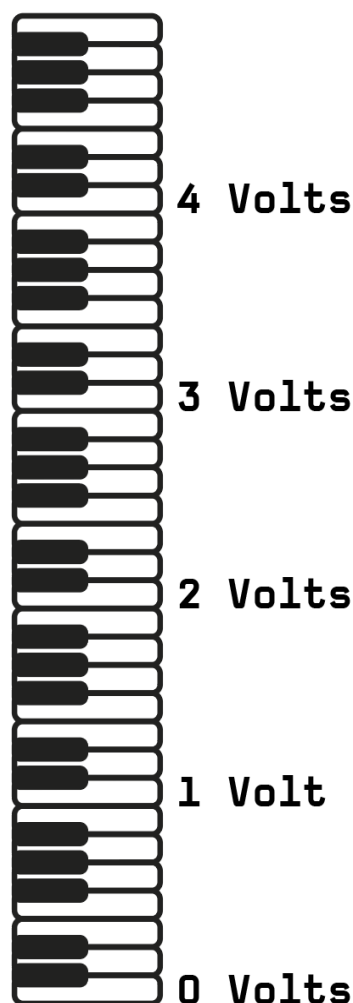
Preparation (Citadel)

- Download the special calibration firmware from here: [Download](#)
- Load the firmware onto your Citadel using USB:
 - Disconnect the Citadel from the eurorack power supply
 - Hold the SHIFT button on the Citadel
 - Connect the Citadel to your computer with a USB C cable (while holding the SHIFT button)
 - Copy the calibration firmware file *.uf2 to the mass storage device on your computer named RPI-RP2
 - Wait for the device to self eject from the computer (ignore the warning message)
- Unplug the Citadel from USB and install it back to your eurorack system (and connect the eurorack power supply).
- Connect your V/Oct source output to the PITCH NOTE INPUT.
- Plug your headphones into the Citadel headphone output to listen to the instructions.

Calibration process

Use headphones to listen to the calibration instructions.

You'll be asked to patch a certain voltage into an input. Typically that will be note C in different octaves on your source.



Usually, 0 Volts is the lowest pitch on the V/oct source (but not always).

If you are unsure of the voltage your source outputs, you can test it by plugging the V/Oct output to a V/Oct input of an oscillator. If the voltage is 0 volts, the pitch should not change much. With 1 volt, the pitch should go up by one octave, with 2 Volts by 2 octaves, and so on.

If you think you have the right voltage at the PITCH MOD NOTE input, then you are asked to confirm it by pressing the right button (BANK or MODE).

If the voltage is near the reference value (± 0.1 Volts), it will allow you to continue to the next step.

If not, you are probably one octave lower or higher. You will be notified when the voltage is too low or too high. Adjust the octave and press the button again.

Calibration follows this script:

- 1) Patch 0 Volts to the PITCH NOTE input, then press the right button (BANK) to continue
- 2) Patch 1 Volt to the PITCH NOTE input, then press the right button (BANK) to continue
- 3) Patch 2 Volts to the PITCH NOTE input, then press the right button (BANK) to continue
- 4) Patch 3 Volts to the PITCH NOTE input, then press the right button (BANK) to continue
- 5) Patch 4 Volts to the PITCH NOTE input, then press the right button (BANK) to continue

- 6) Patch 4 Volts to the PITCH FREE input,
then press the right button (BANK) to continue
- 7) Patch 3 Volts to the PITCH FREE input,
then press the right button (BANK) to continue
- 8) Patch 2 Volts to the PITCH FREE input,
then press the right button (BANK) to continue
- 9) Patch 1 Volt to the PITCH FREE input,
then press the right button (BANK) to continue
- 10) Patch 0 Volts to the PITCH FREE input,
then press the right button (BANK) to continue

NOTE: With Citadel, you will be given the option to keep the input unconnected for 0 Volts calibration. It is however recommended to also match the 0 Volts with your V/Oct source.

Once you hear “Kastle 2 / Citadel is now calibrated, enjoy!”, you can turn your device off, and load it with a regular firmware (follow the instructions for firmware update in the manual).

With the regular firmware, turn the PITCH MOD knob all the way to the right. Only in this setting, the pitch inputs feature the V/Oct behavior.

NOTE: If you have the calibration firmware loaded, but the unit is already calibrated, you will hear the following at startup:

“Citadel already calibrated.”

To repeat the calibration, press the right button (BANK).

To clear the calibration, hold the left button (SHIFT) for at least 3 seconds.

NOTE: Clearing calibration will revert to the average calibration values, i.e. not the factory calibration in case of Citadel.

NOTE: Memory reset with regular firmwares loaded (by holding SHIFT + BANK/FX MODE for over 10 seconds) will NOT erase the calibration. Calibration can only be erased or modified using the calibration firmware.