

# malletStation Gain Offset Adjuster v18

Firmware required for app to run: malletStation\_v1.0.12\_bl.syx

## Contents

- I. Save bladder calibration data to CSV, then set all bars to unity gain
- II. Set up for Learn Mode
- III. Reupload bladder calibration data to device

## I. Save bladder calibration data to CSV, then set all bars to unity gain

**This only needs to be done once for each unit. Skip this section if this has already been completed for the unit you are using.** In order to generate appropriate gain and negative velocity offset values for the learn mode algorithm, you'll need to clear the bladder calibration data on the device. These steps walk you through saving the current bladder calibration data to a CSV, and then clearing the bladder data on device (setting all bars to unity gain). If you're not sure whether or not these steps have been performed yet, it is okay to redo them (if it has been already done, you'll see all bars set to unity (128) in Step 3).

1. With the malletStation plugged in, open the marimba\_GainOffsetAdjuster\_v18.app
  - a. If you are prohibited from opening the app by the OS, try right clicking (or control + click) the app, and clicking Open from the dropdown. [https://support.apple.com/kb/ph25088?locale=en\\_US](https://support.apple.com/kb/ph25088?locale=en_US)
2. Click the bang next to "1. Start parsing incoming sysex", then click *p temporarySetupPatch*

999 = value not set  
Note: gain/-offset values above only display data pulled from device. If not updating, check device for issues.

Execute these two steps each time you open patch / switch out units

1. Start parsing incoming sysex
2. Request data currently on malletStation

first click this button to start receiving SYSEX

3. Select bar to perform learn mode algo, and update bar parameters

Manually set bar parameters

Bar num: 0

bar down threshold: 1

bar up threshold: 1

gain: 0

- offset: 0

Learn Mode

low high

Record

Num bar hits recorded: 5/5

Last recorded velocities for bar

0 min

0 max

Set bar down thresh for all bars: 1 send

Set bar up thresh for all bars: 1 send

Set bar gain for all bars: 0 send

Set bar -offset for all bars: 0 send

p settings <- click to open patch settings

p openVisualizer <- View Tare, Avg Low, Avg High visualizer

p csvTools <- upload/save gain, -velocity offset, and tare CSVs

p temporarySetupPatch <- Saves Bladder Calibration to CSV

p uploadCalibrationCSV <- Restore Bladder Calibration from CSV

Debug

Clear recorded data Firmware Mode Learn

node.script debug tool

Monitor Process Stats Global Stats

Process Running

Node Process successfully started and running

... then click "p temporarySetupPatch" to open bladder calibration CSV saving window

3. Follow the instructions in the window that pops up.

follow instructions found in this window

●
●
●
[temporarySetupPatch]

### Saving calibration data to file, and erasing bladder calibration

☐

Step 1: Bang to set unit to "Calibrate Mode"

☐

Step 2: Bang to fetch current calibration values.

Bladder calibration per bar

Global calibration gain

unset

☐

Step 3: Bang to create CSV of values. This will save to ~/Desktop/ with filename "bladderCalibration\_UNITNUM\_TIMESTAMP"

It is okay to rename the filename after it's created

Step 4: Check that calibration CSV was created on Desktop.

☐

Step 5: If created, bang to erase calibration data on device. Repeat Step 2 to verify unit at unity gain (all bar gain should be 128, and Global calibration gain should equal 0)

The CSV created after step 2 should look something like this →  
 The "Global Calibration Gain" should be recorded at the bottom of the CSV

	A	B
1	bladder calibration data	
2	147	
3	150	
4	130	
5	200	
6	123	
7	164	
8	109	
9	90	
10	124	
11	124	
12	128	
13	192	
14	128	
15	178	
16	134	
17	145	
18	122	
19	80	
20	87	
21	190	
22	200	
23	130	
24	120	
25	210	
26	123	
27	142	
28	120	
		Global calibration gain
		0

Sheet 1 of 1
calibration\_2019\_7\_3

**Do not click the button labeled "bang to erase calibration data on device" if the CSV was not created properly (this CSV is necessary to restore the bladder calibration on the device)**

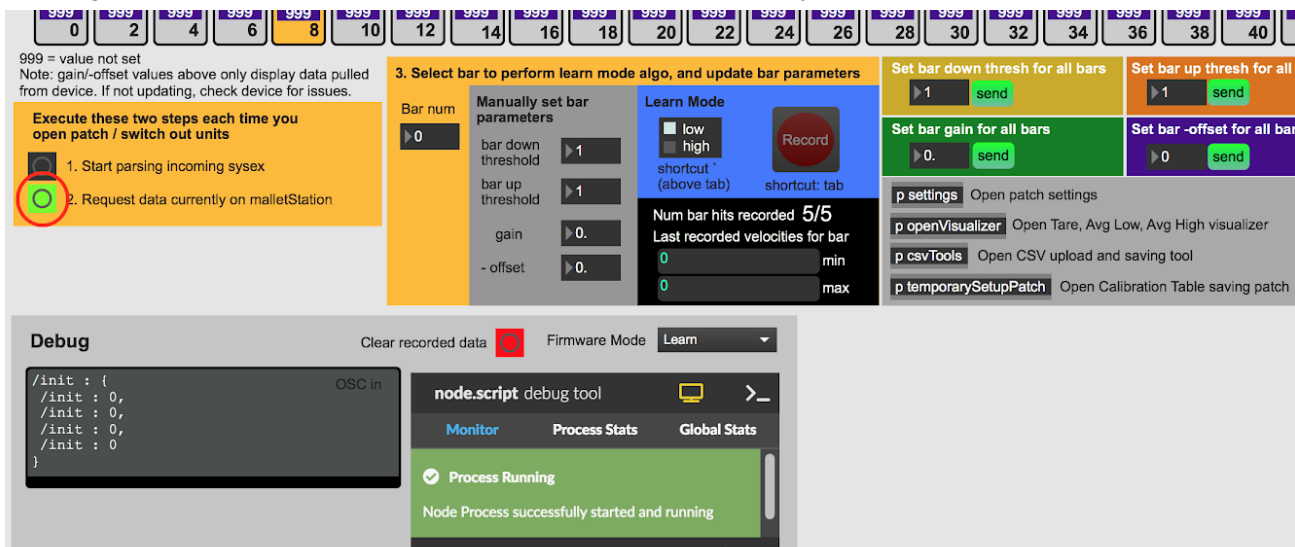
## II. Set up for Learn Mode

**These steps should be performed every time the app is opened**

1. Once the app is opened, click the button labeled “Start parsing incoming sysex”



2. Once completed, the node.script box in the Debug section should show a green “Process Running” message. Now click the button labeled “Request data currently on malletStation.”



3. Wait as the visualizer collects the current bar gains, negative velocity offsets, tares, bar down thresholds, and bar up thresholds from the device. Once complete. The visualizer should look something like this (the only 999 values should be in the low and high tared boxes).

low tared  
high tared  
high-low  
tare

barDownThresh  
barUpThresh  
gain  
-offset

999 = value not set  
Note: gain/-offset values above only display data pulled from device. If not updating, check device for issues.

Execute these two steps each time you open patch / switch out units

1. Start parsing incoming sysex
2. Request data currently on malletStation

3. Select bar to perform learn mode algo, and update bar parameters

Bar num  
Manually set bar parameters

bar down threshold  
bar up threshold  
gain  
-offset

Learn Mode

low  
high  
shortcut (above tab)  
Record  
shortcut: tab

Num bar hits recorded 5/5  
Last recorded velocities for bar  
min  
max

Set bar down thresh for all bars  
Set bar up thresh for all bars  
Set bar gain for all bars  
Set bar -offset for all bars

p settings Open patch settings  
p openVisualizer Open Tare, Avg Low, Avg High visualizer  
p csvTools Open CSV upload and saving tool  
p temporarySetupPatch Open Calibration Table saving patch

Debug

Clear recorded data Firmware Mode Learn

node.script debug tool

Monitor Process Stats Global Stats

Process Running  
Node Process successfully started and running

### III. Calibrating bars with Learn Mode

***This should only be done with units that have their bladder calibration data erased via the instructions under “I. Saving calibration data on unit to CSV”***

1. Click on the bar you wish to calibrate. (Or, enable “Select with bar hit” from the Settings (p settings) window to select the bar by striking it).
2. Record 5 “low” hits and 5 “high” hits. By default, the algorithm tunes the output such that a “low” hit corresponds to a MIDI velocity of 5, and a high hit corresponds roughly to a MIDI velocity of 127. After you’re finished recording, you should see a new gain and negative velocity offset for the bar.

The top part of the image shows a row of 10 bar parameters, each with a color-coded header and several numerical values. The bottom part shows a detailed view for bar 16, including manual parameters and learn mode settings.

Bar num	1	2	3	4	5	6	7	8	9	10
Header	999	999	32	999	999	999	999	999	999	999
Sub-header	999	999	76	999	999	999	999	999	999	999
Value 1	999	999	44	999	999	999	999	999	999	999
Value 2	170	122	140	157	170	157	114	153		
Value 3	20	20	20	20	20	20	20	20		
Value 4	5	5	5	5	5	5	5	5		
Value 5	1.00	1.00	1.81	1.00	1.00	2.27	1.00	1.00		
Value 6	6	6	8	6	6	6	6	6		
Value 7	12	14	16	18	20	22	24	26		

**3. Select bar to perform learn mode algo, and update bar parameters**

**Bar num**  
▶ 16

**Manually set bar parameters**

- bar down threshold ▶ 20
- bar up threshold ▶ 5
- gain ▶ 1.
- offset ▶ 6.

**Learn Mode**

- ☐ low
- ☒ high
- shortcut ` (above tab)
- shortcut: tab

**Record**

**Num bar hits recorded** 5/5

**Last recorded velocities for bar**

min	max
165 178 171 176 174	218 210 216 216 224

## Troubleshooting

- If you are having trouble triggering the bar while Recording,
  - try lowering the *bar down threshold* via the “Manually set bar parameters” section
  - In the Settings window (p settings), increase the “Recording gain value” (this is a temporary gain value sent to the bar during Recording).
- If device is not responding to changes in bar down/up thresholds, gain, or -offset:
  - Try re-initializing the patch by re-clicking the “Start parsing incoming data” and “Request data currently on malletStation” buttons.

### III. Reupload bladder calibration data to device

**These steps go over restoring the original bladder calibration on the device, using a CSV created in “Saving bladder calibration data to CSV”**

1. Click the bang next to “1. Start parsing incoming sysex (if you have not yet started the node script) then click *p uploadCalibrationCSV*

999 = value not set  
Note: gain/-offset values above only display data pulled from device. If not updating, check device for issues.

Execute these two steps each time you open patch / switch out units

1. Start parsing incoming sysex
2. Request data currently on MalletStation

3. Select bar to perform learn mode algo, and update bar parameters

Bar num: 0

Manually set bar parameters

bar down threshold: 1

bar up threshold: 1

gain: 0

- offset: 0

Learn Mode

low high

shortcut: (above tab)

Record

Num bar hits recorded 5/5

Last recorded velocities for bar

0 min

0 max

Set bar down thresh for all bars: 1 send

Set bar up thresh for all bars: 1 send

Set bar gain for all bars: 0 send

Set bar -offset for all bars: 0 send

p settings <- click to open patch settings

p openVisualizer <- View Tare, Avg Low, Avg High visualizer

p csvTools <- upload/save gain, -velocity offset, and tare CSVs

p temporarySetupPatch <- Saves Bladder Calibration to CSV

p uploadCalibrationCSV <- Restore Bladder Calibration from CSV

Click “p uploadCalibrationCSV”

2. Follow instructions in pop-up window. Upload the CSV that was made via the *p temporarySetupPatch* Window... they are already in the correct format for this tool.

[uploadCalibrationCSV]

#### malletStation calibration CSV uploader

Use this patch to upload CSVs of calibration data to the malletStation

Format of the CSV should be:

title row (can be any string)	
8bit calibration value for bar 0	
8bit calibration value for bar 1	
...	
8bit calibration value for bar 42	
8bit Global Calibration value	

Step 1: Click to start node script and set unit to Calibrate mode

Step 2: Click to upload calibration CSV, and wait until loading complete.

upload progress

Step 3: Once complete, verify data below corresponds to values in CSV

array: 10 11 12 13 14 15 16 17 18 19 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

Global Calibration Gain: -0.5

**Note: after you have restored the calibration values, you will need to re-erase (set all bars to unity gain) them using the *p temporarySetupPatch* window next time you wish to run learn mode**